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EXECUTIVE DOCUMENTS

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DURING THE

SECOND SESSION OF THE THIRTY-SEVENTH CONGRESS,

1861-'62.

IN TWELVE VOLUMES.

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OF THE

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OF THE

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TRANSPORTATION OF TROOPS BETWEEN THE MISSOURI
RIVER AND PACIFIC COAST.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

Resolution of the House of the 19th instant, inquiring as to the cost of transportation of troops between the Missouri river and Pacific coast.

MARCH 20, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., March 18, 1862.

SIR: In compliance with the resolution of the House of Representatives of the 19th instant, I have the honor to transmit herewith a communication of the quartermaster general, covering a report "showing the cost to the government for the transportation, per annum, for the last five years, by steam or otherwise, for troops and supplies, between the Mississippi river and the Pacific coast, as well as intermediate points."

Very respectfully, your obedient servant,

EDWIN M. STANTON,
Secretary of War.

HON. GALUSHA A. GROW,
Speaker of the House of Representatives.

QUARTERMASTER GENERAL'S OFFICE,
Washington City, March 17, 1862.

SIR: I have the honor to transmit herewith a report in reply to the resolution of the House of Representatives of February 19, 1862, calling for the "cost to the government for the transportation per annum, for the last five years, by steam or otherwise, for troops and supplies, between the Mississippi river and the Pacific coast, as well as intermediate points." The resolution is returned.

I am, very respectfully, your obedient servant,

M. C. MEIGS,
Quartermaster General.

HON. EDWIN M. STANTON,
Secretary of War.

Cost to the United States government for transportation, by steam or otherwise, of troops and supplies, between the Mississippi river and the Pacific coast, as well as intermediate points, per annum, for the past five years, commencing the beginning of the fiscal year 1857, and ending with the fiscal year 1861, viz :

Fiscal year 1857: Commencing July 1, 1856, and ending June 30, 1857.	Clothing	\$47,069 33	\$2,101,367 31
	Subsistence	483,977 24	
	Ordnance	46,810 48	
	Troops and other supplies	1,523,510 26	
Fiscal year 1858: Commencing June 1, 1857, and ending July 30, 1858.	Clothing	49,051 41	3,961,848 40
	Subsistence	728,234 14	
	Ordnance	33,456 47	
	Troops and other supplies	3,151,106 38	
Fiscal year 1859: Commencing July 1, 1858, and ending June 30, 1859.	Clothing	125,106 59	4,319,550 95
	Subsistence	1,682,719 49	
	Ordnance	47,851 44	
	Troops and other supplies	2,463,873 43	
Fiscal year 1860: From July 1, 1859, to June 30, 1860.	Clothing	94,397 09	2,160,588 27
	Subsistence	556,954 77	
	Ordnance	29,651 47	
	Troops and other supplies	1,479,584 94	
Fiscal year 1861: From July 1, 1860, to June 30, 1861.	Clothing	27,695 32	1,503,799 09
	Subsistence	423,603 36	
	Ordnance	16,624 78	
	Troops and other supplies	1,035,875 63	
			14,047,154 02

NOTE.—Large expenditures appertaining to this statement have been made at New York for California, at New Orleans for Texas, and other points in the east for Utah and New Mexico, the exact amount of which cannot be ascertained except by reference to the vouchers in the office of the Third Auditor of the Treasury, and which cannot be done without causing great delay.

MILEAGE AND PER DIEM CHARGED BY THE MARSHAL AND
DISTRICT ATTORNEY OF THE NORTHERN DISTRICT OF
NEW YORK.

LETTER

OF

THE SECRETARY OF THE TREASURY,

IN ANSWER TO

A resolution of the House of the 17th instant, in relation to mileage and per diem charged by the marshal and district attorney of the northern district of New York of late years, &c.

MARCH 21, 1862.—Referred to the Committee on the Judiciary, and ordered to be printed.

TREASURY DEPARTMENT, *March 19, 1862.*

SIR: In obedience to the resolution of the House of Representatives of the 17th instant, to wit: "That the Secretary of the Treasury be directed to communicate to this House a statement showing, separately, the mileage and per diem charged by the marshal and district attorney of the northern district of New York of late years; also the fees and mileage paid to witnesses by the United States, and the rate and amount charged for transporting criminals in said district," I have the honor to transmit herewith a communication, under date of the 19th instant, from the First Comptroller of the Treasury, with copies of correspondence and four abstracts, embodying the information desired.

I have the honor to be, very respectfully,

S. P. CHASE,
Secretary of the Treasury.

HON. GALUSHA A. GROW,
Speaker of the House of Representatives.

TREASURY DEPARTMENT,
Comptroller's Office, March 19, 1862.

SIR: In obedience to your call for a report on a resolution adopted by the House of Representatives on the 17th instant, I transmit herewith four abstracts made from the accounts of marshals and attorneys for the northern district of New York.

Abstract A shows "separately the mileage and per diem charged by the marshal" in two accounts—October term, 1859, United States circuit court, and June term, 1860, circuit court.

Abstract B shows the fees charged in eight criminal cases, with "the rate and amount charged for transporting criminals in said district." This abstract is incomplete, owing to the failure of the marshal (Mr. Mott) to render his final accounts, but the result of each case is given.

Abstract C shows the "fees and mileage paid to witnesses by the United States," from the January term, 1861, to the January term, 1862, inclusive, and the cost of each term.

Abstract D shows "separately the mileage and per diems" charged by the district attorneys from June, 1853, to December, 1861, inclusive.

I enclose, also, copies of the following letters and opinions relative to mileage of United States attorneys, and have to request that you will please send them up with the abstracts, viz :

Secretary of the Interior to Attorney General, February 4, 1860; Attorney General to Secretary of the Interior, February 11, 1860; Secretary of the Interior to Attorney General, February 14, 1860; Attorney General to Secretary of the Interior, February 18, 1860; Secretary of the Interior to the Comptroller, February 24, 1860.

The "resolution" is returned herewith.

Very respectfully,

ELISHA WHITTLESEY,
Comptroller.

Hon. S. P. CHASE,
Secretary of the Treasury.

SERVICES BEFORE COMMISSIONERS.

Name of commissioner.	Name of deputy marshal.	Name of defendant.	Expenses endeavoring to arrest.	Mileage to arrest warrant.	Fees for serving warrants to arrest and commit to jail.	Transportation of marshal, guard, and prisoners.	Amount.	Mileage serving subpoena.	Fees serving subpoena.	Per diem.	Committing and discharging.	Remarks.
A. Perry, Oswego.....	A. Fitch.....	Isaac Rosay.....	\$19 94	\$107 64	\$2 00	Albany to Oswego, 166 miles...	\$55 80	.....	.....	.....	.....	Made several trips to find him.
R. J. Hilton, Albany.....	do.....	Marvin Fox.....	9 28	38 66	4 00	do.....	.....	.....	.....	.....	.....	No arrest.
Do.....	do.....	Alexander Merville.....	.....	38 66	2 00	do.....	.....	.....	.....	.....	.....	Do.
Do.....	J. Maloy.....	Polly Ganiz.....	.....	.....	2 00	do.....	.....	.....	.....	.....	.....	Warrant to take out of jail.
Do.....	do.....	Austin White.....	.....	.....	2 00	do.....	.....	.....	.....	.....	.....	Do.
M. Beach.....	J. B. Townsend.....	Daniel Caulkins.....	.....	43	2 00	Troy to Albany, 7 miles.....	2 10	.....	.....	.....	.....	Do.
W. C. Ruger.....	J. Maloy.....	Polly Ganiz.....	.....	.....	2 00	do.....	.....	.....	.....	.....	.....	Do.
Do.....	do.....	Austin White.....	.....	.....	2 00	do.....	.....	.....	.....	.....	.....	Do.
Do.....	do.....	D. M. Haight.....	.....	.....	2 00	do.....	.....	.....	.....	.....	.....	Do.
Do.....	H. Slattuck.....	Amos J. Haight.....	3 90	9 12	.....	do.....	.....	.....	.....	.....	.....	No arrest.
Do.....	do.....	D. M. Haight.....	.....	9 12	.....	do.....	.....	.....	.....	.....	.....	Do.
Do.....	do.....	D. M. Haight.....	.....	9 12	.....	do.....	.....	.....	.....	.....	.....	Do.
Do.....	do.....	Gideon Hoston.....	5 00	9 12	.....	do.....	.....	.....	.....	.....	.....	Do.
Do.....	do.....	George Eaton.....	.....	9 12	.....	do.....	.....	.....	.....	.....	.....	Do.
Do.....	do.....	A. J. Haight.....	.....	9 12	.....	Troy to Syracuse, 152 miles.....	45 60	.....	.....	.....	.....	Do.
Do.....	do.....	Caroline Haight.....	.....	9 12	.....	do.....	30 40	.....	.....	.....	.....	Do.
Do.....	do.....	D. M. Haight.....	.....	9 12	.....	do.....	30 40	.....	.....	.....	.....	Do.
Do.....	do.....	A. J. Haight, (final warrant to com't.)	.....	9 12	.....	Syracuse to Albany, 148 miles..	44 40	.....	.....	.....	.....	Do.
Do.....	do.....	D. M. Haight, (final warrant to com't.)	.....	.....	.....	do.....	44 40	.....	.....	.....	.....	Do.
Do.....	do.....	Austin White.....	.....	8 88	.....	Albany to Syracuse, 148 miles..	44 40	.....	.....	.....	.....	Do.
Do.....	do.....	Do.....	.....	.....	.....	Syracuse to Albany, 148 miles..	44 40	.....	.....	.....	.....	Do.
Do.....	do.....	Thomas Corwin.....	.....	9 36	.....	Waterford to Syracuse, 156 miles..	46 80	.....	.....	.....	.....	Do.
Do.....	do.....	Do.....	.....	.....	.....	Syracuse to Albany, 148 miles..	44 40	.....	.....	.....	.....	Do.
A. A. Boyce, Syracuse.....	do.....	Jesse Hitchins and Michael Niece.....	.....	2 34	4 00	Rome to Syracuse, 39 miles.....	15 60	.....	.....	.....	.....	Do.
Do.....	do.....	Francis H. Conants.....	.....	1 98	.....	Camden to Utica, 33 miles.....	9 90	.....	.....	.....	.....	Do.
A. P. Nichols, Buffalo.....	L. H. Williams.....	Sam'l S. Judson.....	.....	.....	.....	Chemung co. to Binghamton, 58 miles.	17 40	.....	.....	.....	.....	Do.
C. B. Hall, Binghamton.....	P. V. Lankton.....	Jas. Van Eten.....	.....	3 40	.....	.....	.....	.....	.....	.....	.....	Do.

A.—Account of S. B. Jewett, U. S. marshal northern district of New York—Continued.

Name of commissioner.	Name of deputy marshal.	Name of defendant.	Expenses endeavoring to arrest.	Mileage to serve warrant.	Fees for serving warrant to arrest and commit to jail.	Transportation of marshal, guard, and prisoners.	Amount.	Mileage serving subpena.	Fees serving subpena.	Per diem.	Committing and discharging.	Remarks.
W. C. Storrs, Rochester.	J. M. Mott	Jas. Van Eiten .....	.....	\$9 60	\$2 00	Binghampton to Albany, 228 miles.	\$68 40	\$50 52	\$2 50	\$8 00	\$0 50	
Miles Beach, Troy	D. A. G. Arthur	Calvin Hall .....	.....	5 94	2 00	Halloport to Rochester, 160 miles.	48 00	14 40	2 50	6 00	1 05	Copy and cert.
Do	do	Jos. C. Lord .....	.....	3 48	2 00	Utica to Troy, 99 miles.	68 90	4 14	1 00	6 00	1 55	Do.
C. B. Hall, Binghampton.	Thos. Young	Chas. Patchin .....	.....	3 48	2 00	Troy to Auburn, 178 miles.	53 40	4 32	1 50	6 00	1 50	
Do	do	do .....	.....	3 48	2 00	Van Etenville to Binghampton, 58 miles.	17 40	4 20	1 50	.....	.....
Do	do	Catharine Van Eiten .....	.....	.....	.....	do	11 60	.....	.....	.....	.....
W. C. Ruger, Syracuse.	H. A. Olmstead	Jas. Van Eiten	\$4 50	9 24	2 00	Troy to Syracuse, 152 miles.	45 60	.....	.....	4 00	1 55	Do.
Do	do	Jos. Garfield .....	.....	9 13	2 00	Syracuse to Albany, 148 miles.	44 40	5 40	1 50	4 00	5 00	Do.
Do	do	Polly Gantz .....	.....	9 12	2 00	Troy to Syracuse, 152 miles.	45 60	.....	.....	.....	.....
Do	do	do .....	.....	6	2 00	Syracuse to Albany, 148 miles.	44 40	.....	.....	.....	.....
Do	do	Fred'k Gantz .....	.....	.....	2 00	Rochester	60	13 80	5 00	2 00	50	
W. C. Storrs, Rochester.	do	Jas. Tabany .....	.....	.....	2 00	.....	.....	.....	.....	.....	.....
			42 02	330 34	68 00		954 00	170 28	25 50	90 00	31 40	

JUNE TERM, 1860, CIRCUIT COURT, SERVICES BEFORE COMMISSIONERS.

Albertus Perry, Oswego.	Abira Fitch	Andrew Farrell	10 14	2 00	Schenectady to Oswego, 169 miles.	50 70	11 40	1 00	4 00	50	
Do	do	John Farrell	10 14	2 00	do	33 80	10 14	1 00	4 00	.....
A. A. Boyce, Utica.	do	Dana McCauley	13 08	2 00	Morish to Utica, 216 miles.	65 40	13 38	1 00	4 00	1 00	
W. C. Ruger, Syracuse.	H. Shattuck	Hiram Hagle	3 38	9 72	.....	.....	.....	.....	.....	.....
Do	do	Edwin Davis	90	2 00	Rome to Utica, 15 miles.	4 50	1 32	2 00	6 00	50	
A. A. Boyce, Utica.	Chas. Reed	John Wilson	90	2 00	do	3 00	.....	.....	6 00	50	
Do	do	Jas. Sandall .....	.....	.....	.....	.....	.....	.....	.....	.....
			3 38	54 60	10 00	157 40	36 34	5 00	34 00	2 50	

SERVICE IN UNITED STATES CIRCUIT COURT.

Name of deputy.	Name of defendant.	Expenses endeavor- ing to arrest.	Mileage to serve war- rants.	Fees for serving war- rants to commit.	Transportation of marshal, guard, and prisoners.	Amount.	Mileage to serve sub- poenas.	Fees to serve sub- poenas.	Per diem for attend- ance.	Committing and dis- charging.	Remarks.
John Maloy.....	George Bartholomew..	.....	.....	.....	.....	.....	\$35 38	\$2 00	.....	.....	.....
Do.....	John Hutchinson.....	.....	.....	.....	.....	.....	35	1 50	.....	.....	.....
John B. Townsend ..	Wm. C. Follet.....	.....	.....	.....	.....	.....	16 96	7 00	.....	.....	.....
Do.....	James L. McCoy.....	.....	.....	.....	.....	.....	19 96	3 00	.....	.....	.....
Do.....	Jas. G. McNutt.....	.....	.....	.....	.....	.....	8 64	5 50	.....	.....	.....
Do.....	John M. Tuller.....	.....	\$5 16	\$2 00	Deerfield to Albany, 86 miles ..	\$35 80	8 90	2 50	.....	\$0 50	.....
Do.....	(Summoning jurors for the term, \$50.)	.....	.....	.....	Travel to summon ..	.....	30 00	.....	.....	.....	.....
H. Shattuck.....	Chas. Williams.....	\$2 00	18 30	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	Jos. H. Fairchilds ..	3 00	13 68	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	(For grand jury)	.....	.....	.....	.....	.....	32 34	5 00	.....	.....	.....
Do.....	Jas. G. McNutt.....	.....	.....	.....	.....	.....	8 36	1 00	.....	.....	.....
Do.....	Dan. Tompkins.....	.....	.....	.....	.....	.....	14 82	1 00	.....	.....	.....
Do.....	Horace Stevens.....	.....	.....	.....	.....	.....	8 36	1 50	.....	.....	.....
Edwin Shepard.....	Chas. H. Mansel.....	.....	8 62	2 00	Auburn to Buffalo, 147 miles ..	44 10	.....	.....	.....	1 05	.....
Wm. O. Dryer.....	Horace Stevens.....	.....	38 64	1 00	.....	.....	.....	.....	.....	.....	.....
Do.....	Morris Wilcox.....	.....	.....	.....	.....	.....	55 80	1 00	.....	.....	.....
Do.....	(No defendant named).	.....	.....	.....	.....	.....	83 40	1 00	.....	.....	.....
Do.....	Jos. L. McCoy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
R. S. Doty.....	John Woodward.....	.....	11 16	2 00	Oswego to Albany, 186 miles ..	55 80	.....	1 00	.....	.....	Including copy and cer- tificate.
L. H. Williams.....	(No defendant named)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
John L. Stetson.....	Jos. M. Jackson.....	.....	.....	.....	.....	.....	36 66	5 00	.....	.....	.....
Do.....	Stephen Smith.....	.....	10 44	2 00	Auburn to Albany, 174 miles ..	52 20	40 06	1 50	.....	.....	Do.
Do.....	Horace Stevens.....	.....	10 44	2 00	do do do.....	52 20	10 74	1 50	.....	.....	Do.
Do.....	James Van Etten.....	.....	.....	2 00	.....	.....	7 74	50	.....	.....	Do.
J. M. Mott.....	(No name given)	.....	.....	.....	.....	.....	67 82	3 00	.....	.....	.....
W. A. G. Arthur.....	Jas. G. McNutt.....	.....	.....	.....	.....	.....	9 84	9 00	.....	.....	.....
Thos. Young.....	(No name given)	.....	.....	.....	.....	.....	18 90	3 50	.....	.....	.....
H. A. Olmstead.....	Samuel C. Albro.....	.....	.....	.....	.....	.....	17 68	2 00	.....	.....	.....
Do.....	Samuel C. Albro and Morris Wilcox.	.....	.....	.....	.....	.....	10 44	2 00	.....	.....	Travel from Clarkson to Albany to attend.
		5 00	116 64	13 00		230 10	534 42	49 00	49 80	5 35	

FEES AND MILEAGE OF MARSHALS, ETC.

A.—Account of S. B. Jewett, United States marshal northern district of New York, &c.—Continued.

JUNE TERM, 1860, CIRCUIT COURT.

Name of deputy.	Name of defendant.	Expenses endeavoring to arrest.	Mileage to serve warrants.	Fees for serving warrants to arrest and to commit.	Transportation of marshal, guard, and prisoners.	Amount.	Mileage to serve sub-pennas.	Fees to serve sub-pennas.	Per diem for attendance.	Committing and discharging.	Remarks.
Wm. C. Dryer	Thos. F. Crandall .....	.....	.....	.....	.....	.....	\$177 24	\$5 50	.....	.....
Do.	Abner Woodworth .....	.....	.....	.....	.....	.....	12 60	3 50	.....	.....
Do.	Samuel C. Albro .....	.....	.....	.....	.....	.....	62 02	3 00	.....	.....
Do.	Morris Wilcox .....	.....	.....	.....	.....	.....	1 32	50	.....	.....
Do.	Geo. Manning and Levi Dwyer .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do.	Geo. Stephens <i>et al</i> .....	.....	\$1 74	\$10 00	Rochester to Canandaigua, 29 miles.	\$29 00	.....	3 00	.....	.....
Do.	David C. Mann .....	.....	.....	.....	Travel to summon .....	.....	6 78	.....	.....	.....
Do.	(summoning jurors for the term, \$20.) .....	.....	.....	.....	.....	.....	44 10	.....	.....	.....
Do.	David C. Mann .....	.....	1 74	2 00	Rochester to Canandaigua, 29 miles.	8 70	18 30	4 00	.....	\$0 50	
Abira Fitch	Wm. McCarick .....	.....	1 74	2 00	do.	8 70	19 44	3 00	.....	50	
Do.	Geo. Stephens .....	.....	.....	.....	.....	.....	72 38	5 00	.....	.....
H. A. Olmstead	William Cullom, (from Criminal Court, District of Columbia.) .....	.....	.....	.....	.....	.....	116 84	1 50	.....	.....
Do. ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
H. Shattuck	John Tifts .....	.....	.....	2 00	Six miles from court-house	1 30	10 08	3 50	.....	.....
Do.	Wm. T. Crandall, (attachment as witness.) .....	.....	.....	2 00	.....	.....	.....	.....	.....	.....
Do.	John Tifts, (attachment as witness.) .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do.	G. Stevens and 4 others .....	.....	.....	10 00	Canandaigua to Auburn penitentiary, 49 miles.	34 30	.....	.....	.....	.....
Do.	Wm. Willis .....	.....	5 88	.....	.....	.....	.....	.....	.....	.....
L. H. Williams .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Attendance upon admiralty court at Buffalo.
A. V. Masten	Abm. Woodworth .....	.....	.....	.....	.....	.....	1 68	50	.....	.....
Charles Reed	John Wilson .....	.....	.....	.....	.....	.....	38 94	4 50	.....	.....
Paul Kelsner	Morris Wilcox .....	.....	.....	.....	.....	.....	7 38	4 00	.....	.....	Attendance of marshal upon court. Mileage to attend.
.....	
.....	.....	.....	11 10	28 00	.....	81 90	589 10	41 50	54 90	1 00	

13.—Abstract of marshal's charges in eight criminal cases.

Name of defendant.	Nature of offence.	Name of commissioner.	Expenses endeavoring to arrest.	Mileage to serve warrants.	Fees for serving warrants to arrest and commit.	Transportation of marshal, guard, and prisoner.	Amount.	Mileage serving subpoenas.	Fees for serving subpoenas.	Per diems.	Committing and discharging.	Date of arrest.
Vincent Odell...	Post office larceny...	Wm. A. Beach, Troy...	\$4 00	\$17 85	\$4 00	Elmira to Troy, 298 miles.....	\$9 40	\$14 10	\$2 00	.....	\$9 00	January 9, 1855.
			43	43	3 00	Troy to Albany, 7 miles.....	9 10	.....	.....	.....	50	January 14, 1855.
		Circuit court.....	15 78	1 80	3 00	Albany to Rochester, 363 miles.....	78 90	.....	.....	.....	50	May 14, 1855.
			13 32	7 68	3 00	Rochester to Canandaigua, 30 miles.....	9 00	16 06	3 50	.....	50	June 30, 1855.
					3 00	Canandaigua to Utica, 198 miles.....	38 40	.....	.....	.....	50	July 9, 1855. <i>Nol. proa.</i>
			4 00	56 88	14 00		217 80	30 18	5 50	.....	4 50	November term, 1856, at Buffalo.
John Tallady...	Stealing mail bags...	A. A. Boyce, Utica.....	62 00	11 88	3 00	Elmira to Utica, 198 miles.....	59 40	11 88	2 50	\$2 00	1 00	March 19, 1855.
		Circuit court.....	4 74	3 94	3 00	Utica to Auburn, 79 miles.....	23 70	7 68	5 50	.....	50	March 22, 1855.
		Do.....	13 32	7 68	3 00	Auburn to Canandaigua, 49 miles.....	14 70	29 40	.....	.....	50	June 26, 1855.
		District court.....	6 00	6 00	3 00	Canandaigua to Utica, 138 miles.....	38 40	.....	.....	.....	50	July 9, 1855.
		Do.....	10 74	10 74	3 00	Utica to Troy, 100 miles.....	53 70	.....	.....	.....	50	July 9, 1855.
		Circuit court.....	10 50	19 50	3 00	Troy to Auburn, 179 miles.....	53 50	.....	.....	.....	50	August 23, 1855.
		District court.....	19 50	3 00	3 00	Auburn to Albany, 175 miles.....	97 50	31 50	4 50	.....	1 00	November 2, 1855.
		Do.....	62 00	27 60	30 00	Albany to Buffalo, 325 miles.....	1 50	.....	.....	.....	50	November 2, 1855. Plead guilty, Oct. term, 1855, at Albany.
Thomas Powell.	Stealing mail bags...	A. A. Boyce, Utica.....	62 00	11 88	3 00	Elmira to Utica, 198 miles.....	59 40	11 88	1 00	2 00	1 00	March 19, 1855.
			4 74	3 94	3 00	Utica to Auburn, 79 miles.....	23 70	.....	.....	.....	50	March 22, 1855.
		Circuit court.....	15 78	1 80	3 00	Auburn to Canandaigua, 49 miles.....	55 50	.....	.....	.....	1 00	May 14, 1855.
		District court.....	13 68	10 74	3 00	Canandaigua to Troy, 298 miles.....	37 96	.....	.....	.....	50	June 31, 1855.
		Do.....	10 74	10 74	3 00	Troy to Auburn, 179 miles.....	68 40	.....	.....	.....	50	August 10, 1855.
		Do.....	10 50	19 50	3 00	Auburn to Albany, 175 miles.....	53 50	.....	.....	.....	50	August 31, 1855.
		Do.....	19 50	3 00	3 00	Albany to Buffalo, 325 miles.....	97 50	.....	.....	.....	1 00	October 30, 1855.
		Do.....	62 00	27 60	30 00		498 40	39 84	4 50	2 00	6 00	December 1, 1855. Plead guilty, Jan. term, 1856, at Canandaigua.

B.—Abstract of marshal's charges in eight criminal cases—Continued.

Name of defendant.	Nature of offence.	Name of commissioner.	Expenses incurred in arrest.	Mileage to serve warrants.	Fees for serving warrants to arrest and commit.	Transportation of marshal, guard, and prisoner.	Amount.	Mileage serving subpoenas.	Fees for serving subpoenas.	Per diems.	Committing and discharging.	Date of arrest.
Sullivan Bowen.	Counterfeiting	A. A. Boyce, Utica.....	\$4 00	\$4 60 6 00 42	\$2 00 2 00 2 00	\$23 00 9 00 30 00 2 10 69 00 61 94 55 50	Sanford to Utica, 78 miles..... Utica to Troy, 100 miles..... Troy to Albany, 7 miles..... Auburn to Albany, 185 miles.....	\$7 80 30 00 30 00 2 10 69 00 61 94 55 50	\$2 00 7 00 10 50 11 00 6 00	\$8 00 4 00	40 50	September 7, 1855. September 8, 1855. October 16, 1855.
Dandin Phelps.	Embezzling mail bags.....	A. A. Boyce, Utica..... Do..... Circuit court..... District court..... Do..... Do..... Do.....	82 00	30 18 7 68	2 00 2 00 2 00 2 00 2 00 2 00 2 00	..... Columbia, Pa., to Utica, 523 miles..... Utica to Canandaigua, 125 miles..... Canandaigua to Albany, 49 miles..... Auburn to Canandaigua, 40 miles..... Canandaigua to Albany, 923 miles..... Albany to Buffalo, 235 miles.....	150 90 38 40 14 70 14 70 66 60 97 50	12 48 56 58 138 60	1 50 2 00 8 50	12 00	1 00	May — 1855.
Martin Stowell..	Post office larceny ..	A. A. Boyce, Canandaigua..... Do..... Circuit court..... District court..... Do..... Do..... Do..... Circuit court.....	..... ..... ..... ..... ..... ..... ..... .....	4 90	2 00 2 00 2 00 2 00 2 00 2 00 2 00	Elmira to Canandaigua, 70 miles..... Canandaigua to Utica, 125 miles..... Utica to Albany, 98 miles..... Albany to Canandaigua, 923 miles..... Canandaigua to Albany, 923 miles..... Albany to Canandaigua, 225 miles..... Canandaigua to Rochester, 30 miles..... Rochester to Canandaigua, 30 miles.....	21 00 38 40 39 40 66 60 66 60 66 60 9 00	..... 31 60 61 60 40 56 ..... ..... ..... .....	..... 1 50 4 00	2 00 4 00	1 00	August 30, 1856. September 5, 1856. October 23, 1856. October 28, 1856. January 24, 1857. January 24, 1857. May 20, 1857.
.....	.....	.....	.....	40 26	12 00 ..... ..... ..... ..... ..... .....	.....	.....	62 16	5 50	6 00	5 50..............................	...................................

John Radford,	Counterfitting	9 00	9 00	1 50	9 00 Auburn to Syracuse, 96 miles	7 40	9 82	3 50	0 00	50 December 4, 1853.
	Do.	9 00	9 00	9 00	9 00 Syracuse to Albany, 150 miles	45 00				50 December 11, 1853.
	Do.	9 00	9 00	9 00	9 00 Albany to Syracuse, 150 miles	45 00		9 00		50 December 17, 1853.
	District court.	9 00	9 00	9 00	9 00 Syracuse to Albany, 150 miles	45 00	30 48	9 50		50 April 21, 1856.
	Do.	15 34	9 00	15 34	9 00 Auburn to Auburn, 174 miles	53 90				50 February 9, 1856. <i>Not.</i>
	Do.	9 00	43 80	10 00		198 00	33 30	6 00	10 00	gross Nov. term, 1856, at Buffalo.
Milton B. Evans	Post office larceny	9 00	8 88	2 00	Syracuse to Albany, 148 miles	44 40	8 88	1 00	6 00	50 January 18, 1856.
	A. A. Boyce, Albany	9 00	9 00	4 00	Albany to Syracuse, 150 miles	45 00	42	6 00	12 00	1 50 January 19, 1856.
	A. A. Boyce, Syracuse	4 88	2 00	2 00	Syracuse to Rochester, 81 miles	24 30	14 58	4 50		50 May 30, 1856.
	District court	4 50	2 00	2 00	Syracuse to Canandaigua, 75 miles	22 50	9 00	4 00		50 May 28, 1856.
	Circuit court	8 04	2 00	2 00	Syracuse to Utica, 134 miles	40 20	1 56	1 00		50 May 23, 1856.
	District court	12 32	2 00	2 00	Canandaigua to Syracuse, 75 miles	15 00				50 June 26, 1856. <i>Not.</i>
	Circuit court	2 00	48 60	14 00		191 40	34 44	16 50	18 00	Nov. term, 1856, at Buffalo.

C.

Abstract from the accounts of the marshal for the northern district of New York, showing the fees and mileage paid to witnesses by the United States, and the whole cost of each term of court from the January term, 1861, to the January term, 1862, inclusive, as charged in said accounts.

TERMS.	MILEAGE AND FEES PAID WITNESSES.			COST OF TERM.
	No. miles.	Mileage.	Mileage and per diems.	
1861.				
January term—				
District court, Albany.....	9,864	\$493 20	\$715 70	
Before commissioners.....	1,160	58 00	139 30	\$3,383 68
May term—				
District court, Rochester	8,420	421 00	550 00	
Before commissioners.....	1,542	77 10	119 10	2,031 85
June term—				
Circuit court, Canandaigua ...	16,932	846 60	1,110 60	
Before commissioners.....	2,764	138 20	253 60	2,952 27
July term—				
Before commissioners.....	3,325	166 25	274 75	922 58
District court, Utica.....	2,088	104 40	1,266 90	
Before commissioners.....	160	8 00	40 50	2,836 12
August term—				
District court, Auburn.....	27,855	1,392 75	1,920 50	
Before commissioners	2,819	140 95	286 95	4,140 31
October term—				
Circuit court, Albany.....	33,634	1,681 70	2,395 20	
Before commissioners.....	5,356	267 80	469 60	5,182 59
November term—				
District court, Buffalo.....	32,296	1,614 80	2,057 30	
Before commissioners.....	4,376	218 80	293 80	5,250 63
1862.				
January term—				
District court, Albany.....	76,370	3,818 50	4,526 20	
Before commissioners.....	9,766	488 30	982 30	12,411 57
Total.....	238,727	11,936 35	17,402 30	39,111 60

NOTE.—The cost of each term does not embrace compensation of attorney, clerk, nor commissioners; nor the amount paid by the United States for maintenance of convicts in the penitentiary.

Accounts of United States attorneys, northern district of New York.

FEES AND MILEAGE OF MARSHALS, ETC.

United States circuit and district courts.					Before commissioners.				
Name.	Travel.	Am't.	Per diems.	Am't.	Fees.	Travel.	Am't.	Per diems.	Am't.
S. B. Garvin	Utica to—		1853.			Utica to—		1853.	
	Canandaigua, and return..	\$25 60	June 21 to 30... 6 days, at \$5.	\$30 00	\$30 00	Rochester, and return.....	\$31 40	July 30, 31, 32... 3 days, at \$5.	\$15 00
	Auburn, and return	15 80	July 12 to 16... 5 days, at \$5.	25 00	200 00	Do.....		August 29, 30... 2 days, at \$5.	10 00
	Canandaigua, and return	25 60	Aug. 16 to 30... 15 days, at \$5.	75 00	60 00	Do.....		October 17... 1 day, at \$5.	5 00
	Albany, and return	18 80	Sept. 27, 28... 2 days, at \$5.	10 00	10 00	Troy, and return.....	30 00	December 13, 14... 2 days, at \$5.	10 00
	Buffalo, and return.....	46 50	Oct. 18 to 34... 17 days, at \$5.	85 00	180 00	Do.....	30 00	Nov. 26 to 28... 3 days, at \$5.	15 00
			Nov. 8 to 15... 8 days, at \$5.	40 00		Do.....	30 00	December 31... 1 day, at \$5.	5 00
	Albany, and return.....	18 80	1854.		10 00	Do.....		January 13 to 15... 3 days, at \$5.	15 00
	Do.....	18 80	Jan. 17 to 31... 15 days, at \$5.	75 00		Troy, and return.....	30 00	March 31... 1 day, at \$5.	5 00
			Jan. 24... 7 days, at \$5.	35 00		Canandaigua, and return...	256	April 14, 15... 2 days, at \$5.	10 00
	Rochester, and return...	31 40	May 16, 17... 2 days, at \$5.	10 00		Canaan, and return.....	256	April 19... 1 day, at \$5.	5 00
	Canaan, and return.....	25 60	June 30 to 30... 11 days, at \$5.	55 00	975 00	Do.....		May 30... 1 day, at \$5.	5 00
S. B. Garvin	Utica to—					Do.....			
	Auburn, and return	16 00	1854.			Do.....	163 60		100 00
	Pittsburg, and return.....	55 40	Aug. 15... 1 day, at \$5.	5 00	10 00	Syracuse to—		1854.	
	Albany, and return.....	18 80	Aug. 15... 1 day, at \$5.	5 00	10 00	Oswego, and return.....	7 00	August 16... 1 day, at \$5.	5 00
	Buffalo, and return.....	45 80	Sept. 12, 13... 2 days, at \$5.	10 00	50 00	Utica to—		September 19... 1 day, at \$5.	5 00
			Oct. 17 to 34... 17 days, at \$5.	85 00	75 00	Albany, and return.....	30 00	October 4... 1 day, at \$5.	5 00
			Nov. 14 to 18... 5 days, at \$5.	25 00	50 00	Buffalo, and return.....	45 80	October 30... 1 day, at \$5.	5 00
						Albany, and return.....	18 80	November 2... 1 day, at \$5.	5 00
						Buffalo, and return.....	45 80	December 8... 1 day, at \$5.	5 00
	Albany, and return.....	18 80	1855.		50 00	Troy, and return.....	30 00	December 26... 1 day, at \$5.	5 00
			Jan. 16 to 30... 15 days, at \$5.	75 00		Do.....		January 15... 1 day, at \$5.	5 00
						Do.....	176 20	January 30... 1 day, at \$5.	45 00

D.—Accounts of United States attorneys, northern district of New York—Continued.

United States circuit and district courts.				Before commissioners.			
Name.	Travel.	Am't.	Per diems.	Am't.	Fees.	Travel.	Am't.
S. B. Garvin.....						Utica to— Albany, and return	1855. March 3, 4, 5 March 30, 31..... April 19..... April 23, 24..... April 26..... May 19, 21..... June 4, 5, 6..... June 18, 26, 27..... July 18..... September 1, 7, 8..... September 8, 9..... September 11.....
						Buffalo, and return.....	1855. March 3, 4, 5 March 30, 31..... April 19..... April 23, 24..... April 26..... May 19, 21..... June 4, 5, 6..... June 18, 26, 27..... July 18..... September 1, 7, 8..... September 8, 9..... September 11.....
S. B. Garvin.....						Utica to— Syracuse, and return.....	1855. January 22..... January 23..... February 1, 9..... February 19, 20..... February 22, 23..... Feb. 25, 26, 27..... March 7, 8..... March 17, 18, 19.....
						Do.....	
						Do.....	
						Rochester, and return.....	
						Albany, and return.....	

[illegible]

D.—Accounts of United States attorneys, northern district of New York—Continued.

United States circuit and district courts.						Before commissioners.			
Name.	Travel.	Am't.	Per diems.	Am't.	Fees.	Travel.	Am't.	Per diems.	Am't.
S. B. Garvin.....	Utica to— Albany, and return.....	Miles. 188	1888. Jan. 20 to 25 ... 5 days, at \$5.	\$25 00		Utica to— Albany, and return.....	Miles. 188	1887. February 3, 4, 5.....	\$15 00
						Albany, and return.....	188	February 9.....	5 00
						Buffalo, and return.....	400	February 11.....	5 00
						Albany, and return.....	188	February 13.....	5 00
								March 8, 9.....	10 00
H. M. Garvin, sub- attorney.		18 80		25 00		Buffalo, and return.....	400	March 11, 12.....	10 00
								March 31, April 1.....	10 00
							117 60		60 00
								1888. May 25 to 26.....	20 00
								June 8, 9.....	10 00
J. C. Spencer.....			1888.			Ogdensburg to— Buffalo, and return.....	Miles. 724	1888. April 18, 19.....	10 00
						Do.....	724	April 22.....	5 00
						Do.....	724	May 11, 12, 13.....	15 00
	Ogdensburg to— Rochester, and return.....	Miles. 586	May 18 to 27... 10 days, at \$5.	50 00	\$145 00	Rochester, and return, (via Buffalo).....	378	May 27, 28, 29... June 21.....	15 00
	Medina, and return.....	710	June 23 to July 2. 11 days, at \$5.	55 00	300 00	Rochester to Ogdensburg... Do.....	593		5 00
	Canandaigua, and return..	572		105 00	445 00		284 30		50 00
		186 80							
			1888.			Ogdensburg to— Albany, and return.....	Miles. 664	1888. June 16.....	5 00
	Ogdensburg to— Utica, and return.....	Miles. 378	1888. July 13, 14..... 2 days, at \$5.	10 00	90 00		66 40	1888. July 7.....	5 00
W. C. Brown, sub- attorney.									
J. C. Spencer.....		37 60					66 40		

Auburn, and return	476	47 60	Aug. 17 to 92... 6 days, at \$5.	30 00	140 00	Do..... Syracuse, and return..... Buffalo, and return..... Albany, and return..... Canandaigua, and return..... Buffalo, and return..... Albany, and return..... Syracuse, and return..... Do..... Do..... Rochester, and return..... Albany, and return.....	664 736 734 664 579 734 664 496 496 496 596 634	66 40 49 60 73 40 66 40 57 80 73 40 66 40 49 60 49 60 49 60 59 60 63 40	July 17 July 31, 34 July 31, 37, 38, 39 July 27 Aug. 1 Aug. 34 Aug. 36 Sept. 2, 3 Sept. 7, 8, 9 Sept. 14, 15 Sept. 21, 23 Sept. 23, 24 Sept. 28, 29	5 00 10 00 20 00 5 00 5 00 5 00 5 00 10 00 15 00 10 00 10 00 15 00 10 00		
		85 20		40 00	160 00	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	802 60	802 60	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	1858. Nov. 1, 2	10 00
P. G. Ruchan, sub- attorney.			1858.			..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	.....	.....	1858. Oct. 6, 7 Oct. 16 Oct. 18	..... ..... ..... .....	10 00 5 00 5 00	
J. O. Spencer .....						.................................................................	.....	.....	.....	.....	.....	.....
Ogdensburg to— Buffalo, and return.....	Miles 720	72 00			150 00	.................................................................	.....	.....	.....	.....	.....	.....
		72 00			610 00	.................................................................	.....	.....	.....	.....	.....	.....
		72 00			760 00	.................................................................	.....	.....	.....	.....	.....	.....
J. C. Spencer.....	Miles 564	56 40	Jan. 3, 4 ... 1859. Jan 18 to 21.... 4 days, at \$5.	10 00 20 00	60 54 205 00	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	.....	.....	1859. Jan. 6	.....	.....	.....
Ogdensburg to— Buffalo, and return.....	Miles 720	72 00				..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	.....	.....	.....	.....	.....	.....
Albany, and return.....		128 40		30 00	265 50	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	564 00	564 00	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	85 00

D.—Accounts of United States attorneys, northern district of New York—Continued.

United States circuit and district courts.						Before commissioners.			
Name.	Travel.	Am't.	Per diems.	Am't.	Fees.	Travel.	Am't.	Per diems.	Am't.
E. M. Holbrook, sub-attorney.	Ogdensburg to— Utica, and return.....	376 \$37 60	1859. April 5, 6.....	\$10 00
	Albany, and return.....	568 56 80	April 50.....	5 00
	Oswego, and return.....	496 49 60	May 12.....	5 00
	Syracuse, and return.....	426 42 60	May 16.....	5 00
	Do.....	426 42 60	May 31.....	5 00
L. Hasbrouck, sub-attorney.	Wellsville, and return.....	910 91 00	June 9.....	5 00
	Buffalo, and return.....	720 72 00	.....	.....
	382 20	.....	35 00
	Ogdensburg to— Utica, and return.....	376 37 60	1859. June 14.....	5 00
	Canandaigua, and return...	574 57 40	June 16.....	5 00
J. C. Spencer.....	95 00	.....	10 00
	Ogdensburg to— Canandaigua, and return. 574	Miles.	.....	.....	.....	.....	.....	.....	.....
	Rochester, and return..... 588	Miles.	.....	.....	.....	Ogdensburg to— Troy, and return.....	592 59 20	1859. June 10.....	5 00
	Oswego, and return.....	496 49 60	June 20.....	5 00

W. M. Prebles, sub-attorney.	108 40	.....	10 00

W. C. Brown, sub-attorney.	Ogdensburg to— Syracuse, and return.....	426 42 60	1859. May 11, 12.....	10 00

S. S. Edick, sub-attorney.	Ogdensburg to— Utica, and return.....	376 37 60	1859. May 16.....	5 00

J. C. Spencer...	Ogdensburg to— Utica, and return.....	Miles.	37 00	July 12 to 15 ...	4 days, at \$5	90 00	180 00	Ogdensburg to— Troy, and return.....	Miles.	50 00	July 19 ...	1859.	5 00
	Auburn, and return.....	376	37 00	Aug. 16, 17 ...	2 days, at \$5.	40 00	140 00	Rochester, and return.....	508	50 00	July 20 ...	5 00	
	Buffalo, (via Auburn).....	382	38 00	Nov. 18 to 18..	8 days, at \$5.	40 00	140 00	Syracuse, and return.....	498	49 00	July 28 ...	5 00	
	Buffalo to— Ogdensburg.....	360	36 00					Oswego, and return.....	406	49 00	July 30 ...	5 00	
	Ogdensburg to— Albany, and return.....	566	56 80	Oct. 18 to 22....	5 days, at \$5.	95 00	195 00	Syracuse, and return.....	406	42 00	August 18, 19 ...	10 00	
								Do.....	406	42 00	August 30, 31 ...	10 00	
								Binghamton, and return.....	608	56 00	Sept. 9 to 15, 4 d 7 m	90 00	
								Syracuse, and return.....	406	49 00	September 14, 15	10 00	
								Buffalo, and return.....	730	72 00	September 19, 20	10 00	
								Oswego, and return.....	406	49 00	Sept. 30; Oct. 1	10 00	
W. C. Brown, sub-attorney.	Ogdensburg to— Albany, and return.....	566	56 80					Rochester, and return.....	508	58 80	October 25	5 00	
								Albany, and return.....	568	56 80	November 1	5 00	
								Rochester, and return.....	508	58 80	November 9	5 00	
								Syracuse, and return.....	406	42 00	November 19 ...	5 00	
								Oswego, and return.....	406	49 00	November 31 ...	5 00	
								Buffalo, and return.....	730	72 00	November 13 to 17, 5 days.	25 00	
			216 40			95 00	500 00			835 80		140 00	
E. M. Holbrook, sub-attorney.													
E. M. Holbrook, sub-attorney.													
W. C. Brown, sub-attorney.													

D.—Accounts of United States attorneys, northern district of New York—Continued.

United States circuit and district courts.					Before commissioners.				
Name.	Travel.	Am't.	Per diems.	Am't.	Fees.	Travel.	Am't.	Per diems.	Am't.
J. C. Spencer.....	Ogdensburg to— Buffalo, and return.....	Miles 700	1890. January 3, 4.....	\$10 00		Ogdensburg to— Oswego, and return.....	Miles 495	1890. January 5.....	\$5 00
	Albany, and return.....	568	January 17 to 21.....	20 00		Utica, and return.....	376	January 6.....	5 00
						Syracuse, and return.....	495	January 12.....	5 00
						Oswego, and return.....	495	January 13.....	5 00
						Albany, and return.....	495	January 14.....	10 00
						Syracuse, and return.....	568	February 4 to 6.....	10 00
						Albany, and return.....	719	February 7.....	5 00
						Clinton, and return.....	719	February 18.....	5 00
						Oswego, and return.....	495	February 28.....	5 00
						Utica, and return.....	376	March 10.....	5 00
E. M. Holbrook, special counsel.		198 80		30 00		Albany, and return.....	700	March 30.....	5 00
						Do.....	700	March 30.....	5 00
							647 90		55 00
					\$166 90				
J. C. Spencer.....	Ogdensburg to— Rochester, and return.....	Miles 568	1890. May 15 to 20.... 5 days, at \$5.	25 00	190 00	Ogdensburg to— Rochester, and return.....	Miles 593	1890. April 3.....	5 00
	Canandaigua, and return..	574	June 26 to 30.... 5 days, at \$5	25 00	255 00	Albany, and return.....	700	April 14.....	5 00
						Do.....	700	April 20, 21.....	10 00
						Syracuse, and return.....	495	April 29, 31.....	5 00
						Utica, and return.....	376	April 27.....	5 00
						Oswego, and return.....	595	June 2.....	5 00
						Utica, and return.....	376	June 7.....	5 00
							376 90	June 14.....	5 00
		116 30		50 00	375 00		376 90		40 00
E. M. Holbrook, special counsel.			1890. August term.....		63 80				
S. B. Garvin.....			Abstract of title to Guy Hall, Utica, N. Y., July 1, 1857.		150 00				

J. C. Spencer.....	Miles. 47 80 79 00	Ogdensburg to— Albany, and return..... Buffalo, and return.....	1880. August 31, 32, 33	15 00	170 00	Miles. 37 60 79 00 49 60 70 00 55 60 63 90 63 90 790 70 00 790 70 00 39 80 49 60 37 60 70 00 49 60 71 40 49 60 37 60 49 60 37 60 136 60	Ogdensburg to— Utica, and return..... Syracuse, and return..... Albany, and return..... Saratoga Springs, and return..... Do..... Buffalo, and return..... Albany, and return..... Syracuse, and return..... Oswego, and return..... Utica, and return..... Albany, and return..... Oswego, and return..... Utica, and return.....	1880. July 16..... July 18..... July 20..... July 24..... July 25..... July 26..... August 3..... August 9..... August 7..... August 28..... August 29..... September 19..... September 25..... September 25..... September 27..... September 28..... September 28..... September 29.....	5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 10 00 5 00 5 00 10 00 5 00 5 00 5 00 5 00 5 00 100 00		
J. C. Spencer.....	Miles. 56 80 72 00	Ogdensburg to— Albany, and return..... Buffalo, and return.....	1880. October 16 to 30.. 5 days at \$5. November 13, 14.....	25 00 10 00	130 00	Miles. 37 60 43 60 43 60 49 60 37 60 37 60 49 60 37 60 49 60 37 60 49 60 49 60 60 80 71 40 49 60 588 40	Ogdensburg to— Utica, and return..... Syracuse, and return..... Do..... Oswego, and return..... Utica, and return..... Do..... Oswego, and return..... Albany, and return..... Oswego, and return..... Saratoga Springs, and return..... Elmira, and return..... Oswego, and return..... Oswego, and return.....	1881. October 3, 4..... October 5..... October 8, 9..... October 10, 11..... October 12..... October 13..... October 24..... November 9..... November 16..... December 8..... December 20..... December 31.....	10 00 5 00 10 00 10 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 5 00 75 00		
E. M. Holbrook, as- sistant counsel.	Miles. 198 80	Ogdensburg to— Albany, and return..... Buffalo, and return.....	1881. January term	35 00	130 00	Miles. 37 60 43 60 43 60 49 60 37 60 37 60 49 60 37 60 49 60 37 60 49 60 49 60 60 80 71 40 49 60 588 40	Ogdensburg to— Utica, and return..... Syracuse, and return..... Do..... Oswego, and return..... Utica, and return..... Do..... Oswego, and return..... Albany, and return..... Oswego, and return..... Saratoga Springs, and return..... Elmira, and return..... Oswego, and return..... Oswego, and return.....	1881. January term	105 00	75 00	

FEES AND MILEAGE OF MARSHALS, ETC.

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[illegible]

D.—Accounts of United States attorneys, northern district of New York—Continued.

United States circuit and district courts.					Before commissioners.				
Name.	Travel.	Am't.	Per diem.	Am't.	Fees.	Travel.	Am't.	Per diem.	Am't.
W. A. Dart.....	Potdam to— Syracuse, and return..... Do..... Do..... Buffalo, and return..... Syracuse, and return..... Albany, and return.....	..... 360 360 360 660 360 506	..... December 21..... December 24..... December 27..... December 28..... December 30..... December 30, 31.....	..... \$5 00 5 00 5 00 5 00 10 00 780 00
		\$116 60		\$65 00	\$415 00		1561 40		

DEPARTMENT OF THE INTERIOR,

February 4, 1860.

SIR: James C. Spencer, esq., United States district attorney for the northern district of New York, has appealed to this department from the action of the First Comptroller of the Treasury, suspending certain charges in his accounts.

The suspension thus appealed from are items 2 and 10 in statement No. 10052 of the comptroller upon Mr. Spencer's accounts, which statement is herewith transmitted.

Item 2 of this statement is composed of two charges: the 1st is a charge for travel, in going from Ogdensburg (the district attorney's place of residence) to Albany and Troy (which places are about ten miles apart) to attend separate examinations held at these points on the 10th and 18th of October, 1858, and returning, only one travel on both examinations being charged—\$63 40; and the 2d is for travel in going from Ogdensburg to Albany to attend at a term of the circuit court held on the 19th October, 1858, and returning—\$63 40.

The Comptroller allows this latter charge, but suspends the former, for the reason that the district attorney only actually and necessarily performed one travel from Ogdensburg to Albany to discharge these several official duties.

Item 10 of the same statement is composed of three charges: 1st, travel from Ogdensburg to attend an examination before a commissioner at Syracuse, on December 8th; 2d, same to attend an examination before a commissioner at Oswego, on the 11th December; and 3d, same to attend an examination before a commissioner at Syracuse, on December 15, 1858, amounting in the aggregate to \$134. The Comptroller suspended these charges "till it is shown that *actual travel* was performed to and from the places of holding these examinations on each date as charged in bills," direct and return travel having been allowed for going from Ogdensburg to Buffalo to attend on a term of district court, ending on the 30th November, at the latter place; whence, it is alleged and admitted, the district attorney proceeded to Syracuse on the 8th December following, without going back in the interim to Ogdensburg. To this action Mr. Spencer objects.

The clause in the act of February 26, 1853, fixing the allowance to be made to a district attorney for travel, is in these words:

"For travelling from the place of his abode to the place of holding any court of the United States in his district, and to the place of an examination before a judge or commissioner, of a person or persons charged with crime, ten cents per mile for going and ten cents for returning."

The Comptroller regards this as providing for actual travel only, and declines to allow any charge for that which is merely constructive. Mr. Spencer claims that, under the law, he has a right to charge for travel in each case, and that the Comptroller should allow the same upon being satisfied that he was regularly in attendance upon the commissioner, judge, or court, as charged, without inquiring by what means he arrived there.

In the case of Norman Eddy, a former district attorney for Minnesota, the question arose as to the legality of charges for constructive travel, under circumstances somewhat different, however, from those in that now under consideration, and the opinion of your predecessor was asked thereon. His reply, which will be found in vol. 8, p. 286, Opinions of Attorneys General, was that no allowance could be made "for travelling from one court to another on a circuit, however distant from one another the places of holding the several courts may be," and that the only way of indemnifying the attorney for expenses incurred in going from one court to another was to allow him for travel from his home to the court and back again in every instance, although he may not, in fact, have performed each journey. He advised, therefore, "the allowance of mileage to and from

the court as of right in all cases of the lawful attendance of the attorney," and such has since been the practice.

But the case now before me does not seem to come within the rule thus established. It falls more nearly under that which, by special enactment, controls the allowance of travel to a district attorney for attendance on the district and circuit courts where both are held at the same time and place, and one journey only is made for both, in which case one travel to and from the courts only is paid for. The case, however, is one in which I am in some doubt as to the particular provision of the law which is applicable to it and the construction to be placed thereon, and I have therefore the honor to ask your views upon the following points :

I. Is a district attorney entitled to charge for travelling from his place of abode to attend an examination before a commissioner, and thence back to his abode, when such examination occurs at or near the place of holding a term of court, for attending which he is allowed travel, and when it is certain, from the short time intervening between such examination and such term of court, that no other main travel is actually and necessarily performed in attending the court and in returning when its session is closed ?

II. When a district attorney attends on several examinations, before different commissioners located at different points, on the same or successive days, or with so short a time intervening between them as not to admit of direct and return travel from and back to his abode being actually made for each examination, is he of right entitled, on being officially before such commissioners, full mileage for each such examination ? Or if sufficient time intervene between each attendance to allow him to go back to the place of his abode and return to each successive examination, although he does not actually do this, is he of right entitled to full mileage for each examination at which he officially attends ?

III. Referring to that clause in the act already quoted, and to the paragraph immediately preceding it (in both of which it will be observed the word used is "abode," while in those parts of the same act which fix the travel to be allowed marshals, jurors, and witnesses, the term employed is "residence,") do the words "the place of his abode" therein used, mean the place at which a district attorney permanently resides, or, in legal contemplation, any place where he may temporarily abide, in pursuance of the requirements of the law while in the discharge of his official duties.

In conclusion I respectfully invite your attention to the paragraph of the same act in the following words : "That before any bill of costs shall be taxed by any judge or other officer, or allowed by any officer of the treasury, in favor of clerks, marshals, commissioners, or district attorneys, the party claiming such bill shall prove by his own oath, or some other person having a knowledge of the facts, to be attached to such bill and filed therewith, that the services charged therein have been *actually and necessarily performed*, as therein stated." And would inquire whether, if you should answer questions one and two in the affirmative, the requirements of the attorney to show that the "*services*" charged for by him "*have been actually and necessarily performed*," would not forbid the allowance of any charge for *constructive travel*, in other words, whether the word "*services*" includes travel, or refers only to attendance in court.

To enable you more fully to understand the questions in controversy, as well as to place before you the respective views of the Comptroller and District Attorney Spencer, I transmit herewith all the papers relating to the appeal, as per indorsed list.

Very respectfully, &c.,

J. THOMPSON, *Secretary*.

Hon. J. S. BLACK, *Attorney General*.

ATTORNEY GENERAL'S OFFICE,
February 11, 1860.

SIR: I have been able to give but a brief examination to the questions which you have referred to me in relation to the mileage of a district attorney. The act of 26 February, 1853, allows him "for travelling from the place of his abode to the place of holding any court of the United States in his district, and to the place of any examination, before a judge or commissioner, of a person or persons charged with crime, ten cents per mile for going and ten cents for returning."

By the place of his abode, "I understand the officer's place of residence." This is the usual meaning of the words; and it is, moreover, evident, from the clause immediately preceding the one above quoted, that they are employed in their ordinary sense. It provides that the district attorney shall receive "for each day of his necessary attendance in a court of the United States, on the business of the United States, when the same shall be held at the place of his abode, five dollars, and the like sum for his attendance for each day of the term when the said court shall be held elsewhere." This makes it clear that "the place of his abode" is the place of his permanent residence, and not some other place where he may be temporarily detained in the discharge of official duties.

The other questions which you have referred to me are, I think, covered by the opinion of Mr. Attorney General Cushing of January 3, 1851, in which he advises the allowance of mileage to and from court, as of right in all cases of the lawful attendance of the attorney.

Mileage, under the act of 26 February, 1853, whether of a district attorney, juror, or witness, is required to be estimated for travelling from the place of his abode or residence to the place of holding court, and returning. The law makes the reasonable and natural presumption that he comes from his place of residence and returns to it; and the only question seems to be, whether, in the settlement of accounts, this presumption should not be conclusive. It is certainly so regarded when it operates against the claim of mileage. The party is not allowed to show that he started to the court from some point more remote than his place of residence, and thus entitle himself to a greater compensation. But if the presumption is conclusive against him, why should it not be conclusive in his favor? The true reason why the law has named the points between which the mileage is to be computed, is not, however, to promote the convenience of the person claiming it, but to avoid the inconvenience of calculating the amount of mileage in a vast number of cases without some definite, fixed, and general rule of easy application.

Such a rule is furnished in the construction of the law as given by my learned predecessor.

In the case of jurors and witnesses it would be impracticable to, and it accounts for mileage on the basis of actual travel. I believe it has never been attempted. But the law makes no distinction between the mode of ascertaining their compensation and that of a district attorney, when attending a court or a hearing before a commissioner.

Yours, very respectfully,

J. S. BLACK,

Hon. J. THOMPSON,
Secretary of the Interior.

H. Ex. Doc. 81—3

DEPARTMENT OF THE INTERIOR,
February 14, 1860.

SIR: In your opinion of the 11th instant, herewith enclosed, you have omitted to notice the inquiry presented in the conclusion of my communication to you of the 4th instant, which is in the following language, viz:

"In conclusion, I respectfully invite your attention to the paragraph of the same act, (of February 26, 1853,) in the following words: 'That before any bill of costs shall be taxed by any judge or other officer, or allowed by any officer of the treasury, in favor of clerks, marshals, commissioners, or district attorneys, the party claiming such bill shall prove by his own oath, or some other person having a knowledge of the facts, to be attached to such bill and filed therewith, that the services charged therein *have been actually and necessarily performed*, as therein stated.'

"And would inquire whether, if you should answer questions one and two in the affirmative, the requirement from the attorney to show that the services charged for by him have been *actually and necessarily* performed, would not forbid the allowance of any charge for *constructive* travel; in other words, whether the word '*services*' includes travel, or refers only to attendance in court?" This I regard as quite material, if not in fact the most important of all the questions presented. And I beg leave to ask your views upon it, and to inquire what bearing, if any, the provision of law here quoted has upon the other paragraphs of the act to which I had the honor to invite your attention.

Very respectfully, your obedient servant,

J. THOMPSON,
Secretary.

Hon. J. S. BLACK,
Attorney General.

ATTORNEY GENERAL'S OFFICE,
February 18, 1860.

SIR: I have received your favor of the 14th, requesting my opinion whether travel is included in the word "services," in that portion of the fee bill of 1853, which requires certain officers to make oath that the services charged in their bills have been *actually and necessarily* performed. I think it has not been usual to consider travel as a service under the laws relating to the compensation of persons employed by the government.

The act of 26th August, 1842, provides that "no allowance or compensation shall be made for any extra services whatever, which any clerk or other officer may be required to perform." Other acts prohibit the allowance to any person receiving a fixed salary, or any compensation for the disbursement of money, or the performance of any other "service." And yet, under these acts, clerks and other officers have been usually allowed a certain sum per mile, in lieu of expenses, when required to travel on public business. This practice has been so generally sustained by the departments, and by those officers who are most commendably vigilant in enforcing the laws against extra allowances, that I cannot venture to doubt its correctness. But if mileage or any other allowance for the expenses of travel were to be regarded as a compensation for services, it is clear that the practice to which I have alluded would be in plain violation of law. I should hesitate to pronounce an opinion which would involve such a conclusion.

I can see nothing in the clause to which you have invited my attention which requires any change in the views expressed in my letter of the 11th.

Yours, very respectfully,

J. S. BLACK.

Hon. J. THOMPSON

Secretary of the Interior.

DEPARTMENT OF THE INTERIOR, :

February 24, 1860.

SIR: The points raised by the appeal of James C. Spencer, esq., United States district attorney for the northern district of New York, from the action of your office upon certain items in his accounts, were submitted for the opinion of the Attorney General, in my letters to him of the 4th and 14th instant, copies of which I herewith transmit for your information.

I also transmit copies of his communications in reply, dated the 11th and 18th instant, containing his views upon the questions involved in the appeal, and have to request that you will adjust Mr. Spencer's accounts in accordance with them.

The papers transmitted with your report of the 17th of May last are herewith returned.

Very respectfully, your obedient servant,

J. THOMPSON, *Secretary.*

Hon. WILLIAM MEDILL,

First Comptroller of the Treasury.

CAPTAIN SAMUEL F. DUPONT.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

RECOMMENDING

A vote of thanks by Congress to Captain Samuel F. DuPont, for his services and gallantry displayed in the capture, since the 21st December, 1861, of various points on the coast of Georgia and Florida.

MARCH 24, 1862.—Referred to the Committee on Naval Affairs, and ordered to be printed.

To the Senate and House of Representatives :

The third section of the "Act further to promote the efficiency of the navy," approved December 21, 1861, provides, "that the President of the United States, by and with the advice and consent of the Senate, shall have the authority to detail from the retired list of the navy, for the command of squadrons and single ships, such officers as he may believe that the good of the service requires to be thus placed in command; and such officers may, if upon the recommendation of the President of the United States they shall receive a vote of thanks of Congress for their services and gallantry in action against an enemy, be restored to the active list, and not otherwise."

In conformity with this law, Captain Samuel F. DuPont, of the navy, was nominated to the Senate for continuance as the flag-officer in command of the squadron which recently rendered such important service to the Union in the expedition to the coasts of South Carolina, Georgia, and Florida.

Believing that no occasion could arise which would more fully correspond with the intention of the law, or be more pregnant with happy influence as an example, I cordially recommend that Captain Samuel F. DuPont receive a vote of thanks of Congress for his services and gallantry displayed in the capture, since the 21st December, 1861, of various points on the coasts of Georgia and Florida, particularly Brunswick, Cumberland island and sound, Amelia island, the towns of St. Mary's, St. Augustine and Jacksonville, and Fernandina.

ABRAHAM LINCOLN.

WASHINGTON CITY, March 20, 1862.

NAMES OF PERSONS EMPLOYED IN THE COAST SURVEY.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

TRANSMITTING

A list of the number and names of persons employed in the Coast Survey, and expenditures, during the year ending June 30, 1861.

MARCH 25, 1862.—Laid on the table, and ordered to be printed.

TREASURY DEPARTMENT, *March 21, 1862.*

SIR: In accordance with an act of Congress approved March 30, 1853, I have the honor to transmit herewith a list furnished by the general disbursing agent of the Coast Survey, showing the number and names of the persons employed in the Coast Survey during the fiscal year ending June 30, 1861; the amount of their compensation, and time of employment; together with a statement of all expenditures made under the direction of the Superintendent within that time.

With great respect,

S. P. CHASE,
Secretary of the Treasury.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives,
Washington, D. C.

COAST SURVEY OFFICE, *March 6, 1861.*

SIR: I have the honor to submit for presentation to the House of Representatives, in accordance with an act of Congress approved March 3, 1853, a list furnished by the general disbursing agent of the Coast Survey, Samuel Hein, esq., showing the number and names of persons employed in the Coast Survey during the fiscal year ending June 30, 1861; the amount of their compensation and time of employment; together with a statement of all expenditures made under the direction of the Superintendent within that year.

Very respectfully, yours,

A. D. BACHE,
Superintendent United States Coast Survey.

Hon. S. P. CHASE,
Secretary of the Treasury.

List showing the number and names of the persons employed in the Coast Survey during the fiscal year ending June 30, 1861, with the amount of compensation and time of employment; with a statement of all expenditures made under the direction of the Superintendent of the Coast Survey; prepared in pursuance of an act of Congress approved March 3, 1853, by Samuel Hein, general disbursing agent of the United States Coast Survey.

Names and offices.	Amount of compensation.	Time employed.	Remarks.
<i>Superintendent.</i>			
A. D. Bache	\$6,000 00	1 year.....	
<i>Assistants.</i>			
Edmund Blunt	3,500 00	1 year.....	
F. H. Gerdes.....	2,500 00	1 year.....	
C. O. Boutelle.....	2,300 00	1 year.....	
H. L. Whiting	2,100 00	1 year.....	
John Farley.....	2,000 00	1 year.....	
George Davidson.....	1,900 00	1 year.....	
W. E. Greenwell.....	1,700 00	1 year.....	
W. S. Gilbert.....	1,700 00	1 year.....	
Charles P. Bowles.....	1,125 00	9 months.....	Resigned April 1, 1861.
George W. Dean.....	1,500 00	1 year.....	
George A. Fairfield.....	1,300 00	1 year.....	
George D. Wise.....	1,200 00	1 year.....	
A. W. Longfellow.....	1,200 00	1 year.....	
A. M. Harrison.....	1,200 00	1 year.....	
A. S. Wadsworth.....	1,200 00	1 year.....	
Hull Adams.....	1,200 00	1 year.....	
R. M. Bache.....	1,200 00	1 year.....	
Henry Mitchell.....	1,200 00	1 year.....	
Aug. T. Rodgers.....	1,100 00	1 year.....	
Edward Goodfellow.....	1,000 00	1 year.....	
<i>Sub-assistants.</i>			
James S. Lawson.....	1,100 00	1 year.....	
W. M. Johnson.....	1,000 00	1 year.....	
Charles M. Bache.....	940 00	1 year.....	
J. G. Oltmanns.....	900 00	1 year.....	
Sp. C. McCorkle.....	900 00	1 year.....	
Benjamin Huger, jr.....	600 00	9 months.....	Resigned March 31, 1861.
C. T. Iardella.....	750 00	10 months.....	
Stephen Harris.....	150 00	2 months.....	Resigned August 31, 1861.
P. C. F. West.....	840 00	1 year.....	
S. A. Wainwright.....	788 87	11½ months.....	Resigned June 25, 1861.
J. A. Sullivan.....	200 00	3 months.....	Resigned Sept. 30, 1860.
George H. Bagwell.....	666 66	10 months.....	Resigned April 30, 1861.
M. Seaton.....	253 76	3¼ months.....	Resigned Oct. 25, 1860.
C. Ferguson.....	800 00	1 year.....	
John Mechan.....	800 00	1 year.....	
J. H. Toomer.....	562 50	9 months.....	Resigned April 30, 1861.
H. S. Duval.....	413 30	6¾ months.....	Resigned Jan. 19, 1861.
F. P. Webber.....	750 00	1 year.....	
N. S. Finney.....	487 50	9 months.....	

List of persons employed in the Coast Survey—Continued.

Names and offices.	Amount of compensation.	Time employed.	Remarks.
<i>Sub-assistants—Cont'd.</i>			
W. H. Dennis	\$750 00	1 year.....	
F. W. Dorr	750 00	1 year.....	
W. S. Gilbert	700 00	1 year.....	
W. S. Edwards	650 00	1 year.....	
C. Fendall	650 00	1 year.....	
R. E. Halter	600 00	1 year.....	
Fred. F. Nes.....	600 00	1 year.....	
<i>Hydrographic inspector.</i>			
C. P. Patterson	437 26	1½ month.....	
<i>Artificer.</i>			
Thomas McDonnell.....	1,000 00	1 year.....	
<i>Aids.</i>			
C. Bockwell.....	\$40 p. mo. & sub.	1 year.....	
C. H. Boyd	30....do.....	1 year.....	
McLane Tilton	30....do.....	9 months.....	Resigned March 31, 1861.
J. L. Tilghman.....	25....do.....	10 months.....	Resigned April 30, 1861.
George U. Mayo	25....do.....	1 year.....	Dismissed June 30, 1861.
M. O. Hering	25....do.....	1 year.....	
W. T. Bright	25....do.....	1 year.....	
O. Hinrichs	20....do.....	1 year.....	
J. S. Bradford	20....do.....	1 year.....	
C. Hosmer	20....do.....	11 months.....	
J. D. Bradford	20....do.....	9 months.....	Resigned March 31, 1861.
A. W. Thompson	20....do.....	5½ months.....	Died December 19, 1860.
F. B. Hassler	20....do.....	1 year.....	
Rufus King	15....do.....	11½ months.....	
T. C. Bowie	15....do.....	1 year.....	
Henry W. Bache	20....do.....	1 year.....	
C. B. Boutelle	15....do.....	1 year.....	
W. W. Harding	15....do.....	1 year.....	
R. H. Talcott	15....do.....	5 months.....	
L. M. Johnson	15....do.....	1 year.....	
H. W. Longfellow	15....do.....	3 months.....	
W. S. Simpson	15....do.....	7 months.....	Resigned Jan. 31, 1861.
W. O. Williams	15....do.....	7 months.....	Do do.
L. L. Nicholson	15....do.....	1 year.....	
E. P. Heberton	15....do.....	4 months.....	
P. P. Dandridge	15....do.....	1 month.....	Resigned April 25, 1861.
E. Searle	50 per month.	1 year.....	
<i>Aids on western coast.</i>			
D. Kerr	\$70 p. mo. & sub.	1 year.....	
J. Kincheloe	50....do.....	1 year.....	
A. T. Mosman	40....do.....	1 year.....	
James Gillis	35....do.....	1 year.....	
Horace Anderson	30....do.....	1 year.....	
<i>Disbursing agent.</i>			
Samuel Hein	2,500 00	1 year.....	

List of persons employed in the Coast Survey—Continued.

Names and offices.	Amount of compensation.	Time employed.	Remarks.
<i>Clerks.</i>			
R. L. Hawkins	\$1,300 00	1 year.....	
Wm. S. McPherson	800 00	1 year.....	
F. A. Lueber.....	600 00	1 year.....	
<i>Computers.</i>			
Charles A. Schott.....	1,600 00	1 year.....	
Theo. W. Werner.....	1,565 00	1 year.....	
Eugenius Nulty	1,200 00	1 year.....	
James Main.....	1,100 00	1 year.....	
G. Rumpf.....	1,000 00	1 year.....	
J. Wiessner.....	779 03	10½ months.....	
W. D. Storke.....	169 94	4 months.....	Resigned Oct. 31, 1861.
R. Freeman.....	300 00	1 year.....	
B. H. Todd	313 88	10 months.....	Resigned April 30, 1861.
J. H. Patton.....	432 40	do.....	Do do.
J. E. Dow	268 82	do.....	
<i>Tide computers.</i>			
L. F. Pourtales.....	1,600 00	1 year.....	
R. S. Avery.....	840 00	1 year.....	
John Downes.....	600 00	1 year.....	
Samuel Walker.....	600 00	1 year.....	
M. Thomas	459 00	1 year.....	
J. W. Donn.....	444 00	1 year.....	
C. Balmain	399 00	1 year.....	
J. R. Gilliss.....	270 30	11 months.....	Resigned June 3, 1861.
S. D. Pendleton	240 00	1 year.....	
George B. Vose.....	600 00	1 year.....	
<i>Drawing division.</i>			
A. P. Hill, assistant....	266 66	2 months.....	Resigned April 30, 1861.
C. A. C. Wade, clerk...	275 00	3 months.....	Dismissed Sept. 30, 1860.
J. T. Hoover, clerk	950 00	1 year.....	
W. M. C. Fairfax	188 71	1½ month	Died August 8, 1860.
M. J. McCleary.....	1,779 02	1 year.....	
L. D. Williams.....	806 75	269 days	
A. Lindenkohl	1,302 28	1 yr., pt. on contr'ct.	
W. T. Martin	622 50	249 days	Resigned April 23, 1861.
B. Hooe, jr.....	468 00	312 days	
S. B. Linton	442 75	253 days	Do do.
A. Strausz	747 00	249 days	
J. J. Ricketts	465 75	207 days	
J. W. Maedel.....	506 99	312 days	
A. J. de Zeyk	127 92	85½ days	Resigned Sept. 6, 1860.
F. Fairfax	536 25	312 days	
E. Hergeshelmer.....	1,290 50	1 year, on contract.	
L. Karcher	702 00	312 days	
W. Fairfax	378 00	252 days	
Albert Grupe.....	200 00	On contract.....	
B. F. Rittenhouse.....	20 00	do.....	
H. Lindenkohl	47 50	1 month	
C. J. Hoover.....	167 44	On contract.....	

List of persons employed in the Coast Survey—Continued.

Names and offices.	Amount of compensation.	Time employed.	Remarks.
<i>Engraving division.</i>			
E. Wharton, clerk	\$1,200 00	1 year	
C. C. Callan, clerk	415 72	1 year	
George McCoy	2,000 00	1 year	
J. Enthoffer	2,123 00	1 year, on contract.	
J. Knight	1,800 00	1 year	
A. Rollé	1,950 00	1 yr., pt. on contr'ct	
A. Sengteller	1,650 00	do do	
W. Phillips	1,612 50	do do	
A. Blondeau	1,550 00	do do	
G. B. Metzseroth	1,170 00	312 days	
H. S. Barnard	1,445 80	1 yr., pt. on contr'ct.	
J. C. Kondrup	1,743 54	do do	
A. Maedel	1,487 17	2,606 hours	
E. A. Maedel	999 00	1 year	
W. Ogilvie	995 28	312 days	
W. Langran	987 69	309 days	
A. Petersen	964 97	302 days	
H. C. Evans	1,653 50	1 year, on contract.	
R. F. Bartle	696 94	308 days	
W. A. Thompson	622 25	10½ months	
C. T. Klackring	622 00	311 days	
F. W. Benner	480 00	1 year	
E. H. Sipe	360 00	1 year	
<i>Engraving.</i>			
J. G. Thompson	240 00	1 year	Resigned Dec. 4, 1860.
M. L. Wells	102 58	5 months	
T. Courtenay	441 36	On contract	
Alfred Buckle	224 19	do	
Selmar Seibert	118 15	do	
<i>Hydrographic draughtsmen.</i>			
A. Balbach	861 00	287 days	
William B. McMurtrie	840 00	1 year	
Edward Cordell	150 00	2 months in office ..	
W. T. Sands	70 18	2½ months in office ..	
A. W. Muldaur	65 00	1 month in office ..	
<i>Electrotypists.</i>			
George Mathiot	2,000 00	1 year	
D. Hinkle	720 00	1 year	
W. H. Gardner	519 00	1 year	
W. Y. Robinson	456 25	1 year	
<i>Copper-plate printers.</i>			
John Rutherford	780 00	312 days	
John Barrett	390 00	do	
<i>Lithographic printers.</i>			
Edward Waller	130 00	52 days	
D. B. Morgan	70 00	35 days	
William Young	52 00	52 days	
William Morgan	24 00	24 days	

List of persons employed in the Coast Survey—Continued.

Names and offices.	Amount of compensation.	Time employed.	Remarks.
<i>Map room.</i>			
W. M. Manydier.....	\$416 66	1 year.....	
William Mertz.....	604 50	302½ days.....	
<i>Instrument makers.</i>			
J. Vierbuchen.....	1,200 00	1 year.....	
Thomas J. Hunt.....	763 10	293½ days.....	
J. Nessensen.....	584 00	292 days.....	
J. W. Smith.....	564 00	282 days.....	
R. Schellhaas.....	420 87	240½ days.....	
Peter Vierbuchen.....	388 75	311 days.....	
John Foller.....	156 00	312 days.....	
<i>Carpenters.</i>			
A. Yeatman.....	811 20	312 days.....	
Henry Trine.....	702 00	312 days.....	
R. H. Yeatman.....	427 62	303½ days.....	
<i>Archives and library.</i>			
C. B. Snow.....	1,100 00	1 year.....	
E. Fitzgerald.....	466 66	1 year.....	
A. M. Smith.....	300 00	1 year.....	
<i>Clerks.</i>			
W. W. Cooper.....	1,400 00	1 year.....	
A. W. Russell.....	583 32	5 months.....	Resigned Nov. 30, 1860.
Frederick Whyte.....	1,000 00	1 year.....	
V. E. King.....	910 00	1 year.....	
Hugh McHenry.....	733 87	10½ months.....	Resigned May 15, 1861.
George A. Sawyer.....	450 00	9 months.....	Resigned March 31, 1861.
J. K. Cleary.....	322 42	9½ months.....	Resigned April 22, 1861.
G. S. Tansill.....	90 97	1½ months.....	Resigned August 15, 1860.
<i>Messengers.</i>			
Daniel Flynn.....	600 00	1 year.....	
Thomas Kenney.....	525 60	1 year.....	
William Ingram.....	438 00	1 year.....	
Sampson Nutter.....	438 00	1 year.....	
Dennis Orme.....	360 00	1 year.....	
William H. Brent.....	307 00	9½ months.....	Resigned April 19, 1861.
John H. Diggs.....	279 60	8½ months.....	
George M. Kraft.....	240 00	1 year.....	
Edward Gantt.....	66 00	2 months.....	
<i>Watchman.</i>			
B. Neff.....	525 60	1 year.....	
<i>Tide observers.</i>			
R. T. Bassett.....	30 p. mo. & sub	1 year.....	
Thomas E. Ready.....	45 per month..	1 year.....	

List of persons employed in the Coast Survey—Continued.

Names and offices.	Amount of compensation.	Time employed.	Remarks.
<i>Tide observers—Cont'd.</i>			
A. M. Smith.....	\$45 per month.	To April 30, 1861..	
P. Donegan.....	40....do.....	1 year.....	
Charles Keyser.....	40....do.....	To April 1, 1861....	
George W. Mastin.....	40....do.....	To Feb. 23, 1861....	
H. Peter Wilson.....	40....do.....	To March 31, 1861..	
M. C. King.....	20....do.....	1 year.....	
W. B. Herron.....	20....do.....	To March 31, 1861..	
Henry Benners.....	20....do.....	To Dec. 31, 1831....	
Louis Wilson.. W. coast.	70 p. mo. & sub.	1 year.....	
Andrew Cassidy.. do..	70....do.....	1 year.....	
John Xantus..... do..	70....do.....	1 year.....	
H. E. Uhrlandt.. do..	1 p. day & sub.	1 year.....	
<i>Ship keepers.</i>			
John Lannon.....	35 per month..	1 year.....	
Peter Finn.....	35....do.....	From May 29, 1861..	
Frank Shannon.....	35....do.....	do.....	
Job Elliot.....	35....do.....	do.....	
Jeff. Powers.....	35....do.....	From May 25, 1861..	
John Bunting.....	35....do.....	From Apr. 30, 1861..	
Levin Craig.....	1 per day.....	do.....	
<i>Sailing masters.</i>			
William Budd.....	70 p. mo. & sub.	10 months.....	Resigned April 30, 1861.
A. C. Mitchell.....	50....do.....	1 year.....	
<i>Publishing observations, &c.</i>			
W. P. Towbridge, asst..	1,600 00	1 year.....	
J. E. Hilgard.....	583 34	1 year.....	
W. L. Nicholson.....	1,000 00	1 year.....	
Amasa W. King.....	486 66	9½ months.....	Resigned April 22, 1861.
A. S. Clements.....	460 50	307 days.....	
E. M. Pinkney.....	300 00	1 year.....	
M. E. Bronaugh.....	287 50	11¼ months.....	Resigned June 15, 1861.
E. Nicholson.....	12 00	8 days.....	
F. Engel, draughtsman.	939 00	313 days.....	
John F. Stack, watchman	438 00	1 year.....	

The following persons have been employed with authority of the Secretary of the Treasury, under Article I, paragraph 5, of Plan of Reorganization of the Survey of the Coast :

Names and offices.	Amount of compensation.	Time employed.
Benjamin Pierce.....	\$1,500 00	1 year.....
B. A. Gould.....	1,500 00	1 year.....
O. M. Mitchell.....	400 00	1 year.....
Edward Pearce, jr.....	315 00	9 months.....

Statement of expenditures for survey of the Atlantic and Gulf coast in fiscal year 1860-'61, in order of sections of coast and of operations in each section.

Sections.	Third quarter 1860, July, August, and September.	Fourth quarter 1860, October, November, and December.	First quarter 1861, January, February, and March.	Second quarter 1861, April, May, and June.	Total for the year.	Total of each section.
SECTION I.						
1. Triangulation	\$12,452 06	\$4,361 31	\$635 02	\$2,206 67	\$19,655 06	\$43,279 75
2. Topography	5,397 72	2,992 38	1,410 00	1,921 17	11,721 27	
3. Hydrography and tides	7,336 85	2,000 65	1,340 55	1,225 37	11,903 42	
SECTION II.						
1. Triangulation	1,918 07	1,900 21	1,348 84	1,359 00	6,526 12	13,452 18
2. Topography	1,602 62	1,027 00	525 00	628 72	3,783 34	
3. Hydrography and tides	973 85	302 47	929 24	937 16	3,142 72	
SECTION III.						
1. Triangulation	962 08	2,082 66	857 09	1,092 68	4,994 51	13,940 07
2. Topography	1,987 08	1,671 00	1,231 92	1,780 92	6,670 92	
3. Hydrography and tides	1,191 98	542 66	355 00	185 00	2,274 64	
SECTION IV.						
1. Triangulation	675 00	2,382 71	675 00	502 56	4,235 27	13,854 79
2. Topography	200 00	598 05	1,333 23	608 75	2,740 03	
3. Hydrography and tides .....	.....	791 15	5,989 59	98 75	6,879 49	
SECTION V.						
1. Triangulation	187 50	3,992 10	2,452 09	348 92	6,980 61	15,072 25
2. Topography	50 00	1,755 09	.....	.....	1,805 09	
3. Hydrography and tides	60 00	2,097 09	3,218 52	910 94	6,286 55	
SECTION VII.						
1. Triangulation	488 82	2,199 87	3,423 43	291 66	6,403 78	12,440 89
2. Topography	262 76	1,974 29	1,340 81	.....	3,577 86	
3. Hydrography and tides	180 00	394 09	1,211 13	674 03	2,459 25	
SECTION VIII.						
1. Triangulation	1,022 50	3,123 09	2,421 45	1,032 90	7,599 94	9,601 54
2. Topography	200 00	719 11	245 27	.....	1,164 38	
3. Hydrography and tides	433 10	404 12	.....	.....	837 22	
SECTION IX.						
1. Triangulation	425 00	1,737 93	851 91	463 29	3,478 13	12,674 39
2. Topography	595 52	941 82	1,410 67	786 31	3,734 12	
3. Hydrography and tides	1,457 58	1,674 94	884 51	1,445 11	5,462 14	
Longitude and telegraphic operations in the several sections						11,328 39
Purchase of one schooner						6,700 00
New instruments						62 00

RECAPITULATION OF FIELD EXPENDITURES.

Section 1	\$43,279 75
Section 2	13,452 18
Section 3	13,940 07
Section 4	13,854 79
Section 5	15,072 25
Section 7	12,440 89
Section 8	9,601 54
Section 9	12,674 39
Longitude and telegraphic operations	11,328 39
Purchase of vessel	6,700 00
New instruments	62 00
Total field expenditures	152,406 25

OFFICE EXPENDITURES.

Work of reducing, drawing, engraving, printing maps, electrotyping, materials, and general office-work.

Computations, tidal and other	\$5,298 31
Drawing	6,345 05
Engraving and materials	22,322 47
Electrotyping and material	3,113 73
Printing maps and materials	2,669 08
Instrument-makers and materials	2,174 86
Carpentry and materials	1,319 84
Archives and library	601 49
Recording	1,126 64
Map room	1,021 16
Messengers and watchman	1,641 60
Disbursing	2,500 00
Rent of office	2,000 00
Fuel, wood, oil, &c., &c.	1,276 08
Drawing materials, stationery, blank books, &c.	1,001 15
Express transportation and telegraph messages	519 66
Subsistence of assistant in charge	365 00
Contingent: Repairs of office, furniture, cleaning chimneys, &c., and all other expenses not enumerated above	1,802 55
Total office expenditures	<u>57,098 67</u>

GENERAL RECAPITULATION.

Field expenditures	\$152,406 25
Office expenditures	57,098 67
Total expenditures	<u>209,504 92</u>

Expenditures for continuing the survey of the western coast in fiscal year 1860-'61.

SECTIONS X AND XI.

Field expenditures.

Astronomical and triangulation party	\$16,089 79
Two triangulation parties	21,610 27
Two topographical parties	25,226 98
One hydrographic party	12,115 46
Tidal operations	6,191 51
New instruments	2,464 66

Total field expenditures \$83,698 67



Brought forward..... \$83,698 67

Office expenditures.

Computations, tidal and other	\$7,184 16	
Drawing.....	4,123 00	
Engraving and materials.....	4,408 35	
Electrotyping and materials.....	1,739 00	
Printing maps and materials	2,052 17	
Instrument-makers and materials	1,545 98	
Carpentry and materials.....	1,462 91	
Archives and library	1,525 52	
Recording	1,390 97	
Messengers and watchmen.....	1,252 60	
Disbursing.....	1,900 00	
Rent of office.....	1,350 00	
Fuel, wood, oil, &c.....	690 44	
Drawing materials, stationery, &c.....	1,624 61	
Express transportations.....	204 40	
Copying.....	239 31	
Contingents	672 99	
	<hr/>	
Total office expenditures		33,366 41
		<hr/>
Total expenditures		117,065 08
		<hr/> <hr/>

Expenditures for continuing the survey of the Florida reefs and keys during the fiscal year 1860-'61.

SECTION VI.

Field expenditures.

Three triangulation parties	\$10,988 40	
Two topographical parties	7,930 96	
One hydrographic party.....	7,327 64	
Magnetic and tidal operations	2,421 54	
	<hr/>	
Total field expenditures.....		\$28,668 54

Office expenditures.

Computing, tidal, &c.....	\$1,421 40	
Drawing.....	1,769 46	
Engraving.....	3,246 94	
Printing maps	200 00	
Messengers and watchmen	885 60	
Disbursing.....	800 00	
Rent.....	467 74	
Stationery	159 40	
Express transportation	55 60	
Instrument-makers	1,020 87	
	<hr/>	
Total office expenditures		10,027 01
		<hr/>
Total expenditures		38,695 55
		<hr/> <hr/>

The following expenditures for special surveys, &c., have been made under the direction of the Superintendent of the Coast Survey during the fiscal year 1860-'61 :

For running a line to connect the triangulation on the Atlantic coast with that on the Gulf coast, across the Florida peninsula	\$1, 289 20
For publishing the observations made in the progress of the survey of the coast of the United States	7, 073 50
For repairs of steam and sailing vessels used in the Coast Survey.	8, 563 51
For pay and rations of engineers used in the hydrography of the Coast Survey, no longer supplied by the Navy Department	8, 739 51
For fuel and quarters, and for mileage and transportation for officers and enlisted soldiers of the army serving in the Coast Survey, in cases no longer provided in the quartermaster's department	5, 540 47

SAM'L J. HEIN,

General Disbursing Agent U. S. Coast Survey.

COAST SURVEY OFFICE,

Washington, September, 1861.



CHAPLAINS IN THE ARMY.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

Resolution of the House of 11th instant, transmitting the names of all the chaplains on the rolls on file in the office of the adjutant general.

MARCH 25, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., March 21, 1862.

SIR: In compliance with the resolution of the House of Representatives of the 11th instant, I have the honor to transmit herewith a report of the adjutant general, embracing the names of all the chaplains now in the service of the United States that appear on the rolls on file in his office.

Very respectfully, your obedient servant,

P. H. WATSON,
Secretary of War.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

ADJUTANT GENERAL'S OFFICE,
Washington, March 20, 1862.

SIR: In accordance with the resolution herewith returned, I have the honor to forward a list of the names of the regimental chaplains now in the United States service. Hospital chaplains are not authorized or recognized by law, and this office has no official intimation of the appointment of any.

By the 3d section of the act of Congress of March 2, 1849, thirty chaplains are allowed to the permanent military posts occupied by the army of the United States.

I am, sir, very respectfully, your obedient servant,

L. THOMAS, *Adjutant General.*

Hon. EDWIN M. STANTON,
Secretary of War.

List of chaplains and their names, taken from the muster-rolls for pay on file in the office of the adjutant general of the army.

Benjamin F. Teft	1st regiment cavalry, Maine.
John F. Mines	2d regiment infantry, Maine.
Henry C. Leonard	3d regiment infantry, Maine.
Martin W. Willis	4th regiment infantry, Maine.
John R. Adams	5th regiment infantry, Maine.
Zenas Thompson	6th regiment infantry, Maine.
J. C. Emerson	7th regiment infantry, Maine.
Henry C. Henries	8th regiment infantry, Maine.
	9th regiment infantry, Maine. Rolls not rec'd.
George Knox	10th regiment infantry, Maine.
Caleb H. Ellis	11th regiment infantry, Maine.
	No chaplain appears on the rolls of the 12th, 13th, 14th, and 15th regim'ts Maine vols.
Henry E. Parker	2d regiment New Hampshire volunteers.
Henry Hill	3d regiment New Hampshire volunteers.
Martin M. Willis	4th regiment New Hampshire volunteers.
Elijah R. Wilkins	5th regiment New Hampshire volunteers.
Robert Stinson	6th regiment New Hampshire volunteers.
Joseph Stinson	7th regiment New Hampshire volunteers.
John H. Woodward	1st regiment Vermont cavalry.
Claudius B. Smith	2d regiment Vermont infantry.
Moses P. Parmelee	3d regiment Vermont infantry.
S. M. Plympton	4th regiment Vermont infantry.
Volney N. Simons	5th regiment Vermont infantry.
E. P. Stone	6th regiment Vermont infantry.
	Rolls of 7th Vermont not on file.
Francis C. Williams	8th regiment Vermont infantry.
William H. Cudworth	1st Massachusetts volunteers, infantry.
Alonzo H. Quint	2d Massachusetts volunteers, infantry.
Robert Carver	7th Massachusetts volunteers, infantry.
Thomas Scully	9th Massachusetts volunteers, infantry.
Frederick A. Barton	10th Massachusetts volunteers, infantry.
Elijah F. Watson	11th Massachusetts volunteers, infantry.
Edward L. Clark	12th Massachusetts volunteers, infantry.
Noah Gaylord	13th Massachusetts volunteers, infantry.
Stephen Barker	14th Massachusetts volunteers, infantry.
William G. Scanlan	15th Massachusetts volunteers, infantry.
Arthur B. Fuller	16th Massachusetts volunteers, infantry.
	17th Mass. vols., infantry. No rolls received.
Benjamin F. De Costa	18th Massachusetts volunteers, infantry.
Joseph C. Cromac	19th Massachusetts volunteers, infantry.
Jonas B. Clark	23d Massachusetts volunteers, infantry.
R. G. Mellen	24th Massachusetts volunteers, infantry.
George S. Ball	21st Massachusetts volunteers, infantry.
Horace James	25th Massachusetts volunteers, infantry.
Charles Babidge	26th Massachusetts volunteers, infantry.
Miles Santford	27th Massachusetts volunteers, infantry.
	28th and 29th regiments, complete rolls not received. 1st cavalry F. & S., roll not rec'd.
John E. Perry	1st Rhode Island artillery.
Thorndy Jawson	2d Rhode Island infantry.
Thomas Quinn	3d Rhode Island infantry.

Alonzo Flanders	4th Rhode Island infantry.
Edward A. Walker	4th Connecticut volunteers.
George B. Lasher	5th Connecticut volunteers.
Curtis F. Woodruff	6th Connecticut volunteers.
	7th regiment. No rolls received of F. and S.
Joseph R. Wooley	8th regiment Connecticut volunteers.
Daniel Muller	9th regiment Connecticut volunteers.
Henry Hall	10th regiment Connecticut volunteers.
George Soule	11th regiment Connecticut volunteers.
Peter Franklin Jones	1st regiment New York volunteers. Reported absent since September 23, 1861.
Samuel Baxter	2d regiment New York volunteers.
W. W. Thorpe	3d regiment New York volunteers.
	4th regiment. No chaplain on the rolls.
Gordon Winslow	5th regiment New York volunteers.
Michael Nash	6th regiment New York volunteers.
August Becker	7th regiment New York volunteers.
D. W. Wolf	8th regiment New York volunteers.
Benjamin F. Philips	9th regiment New York volunteers.
	10th regiment. No chaplain on the rolls.
George W. Dodge	11th regiment New York volunteers.
Charles E. Hughes	12th regiment New York volunteers.
John D. Barnes	13th regiment New York volunteers.
Charles E. Hughes	14th regiment New York volunteers.
John S. Inskip	14th regiment New York vols., State militia.
George E. Post	15th regiment New York volunteers.
	16th regiment. No chaplain on the rolls.
Thomas G. Carver	17th regiment New York volunteers.
Alfred A. Farr	18th regiment New York volunteers.
William Hart	19th regiment New York volunteers.
Cornelius Van Santvoord	20th regiment New York volunteers.
John E. Robie	21st regiment New York volunteers.
Henry H. Bates	22d regiment New York volunteers.
Ezra F. Crae	23d regiment New York volunteers.
Mason Gallagher	24th regiment New York volunteers.
	25th regiment. No chaplain on rolls.
Daniel W. Bristol	26th regiment New York volunteers.
Daniel D. Buck	27th regiment New York volunteers.
Charles H. Platt	28th regiment New York volunteers.
Charles Luther	29th regiment New York volunteers.
Nathan G. Eixtell	30th regiment New York volunteers.
Samuel W. Waldron, jr.	31st regiment New York volunteers.
R. H. Robinson	32d regiment New York volunteers.
George N. Cheney	33d regiment New York volunteers.
John B. Van Petten	34th regiment New York volunteers.
Samuel L. Merrill	35th regiment New York volunteers.
Ezra D. Winslow	36th regiment New York volunteers.
P. Tissot	37th regiment New York volunteers.
Alexander V. Murdoch	38th regiment New York volunteers.
Anthony P. Zyla	39th regiment New York volunteers.
William H. Gilder	40th, Mozart regiment.
F. W. Bogan	41st, De Kalb regiment.
	42d regiment. No chaplain on the rolls.
Gilbert B. Hayden	43d regiment New York volunteers.
Loomis H. Pease	44th regiment New York volunteers.

Philip Hagner.....	45th regiment New York volunteers.
Joshua Butts.....	47th regiment New York volunteers.
William P. Strickland.....	48th regiment New York volunteers.
John Bowman.....	49th regiment New York volunteers.
Edward C. Pritchell.....	50th regiment New York volunteers.
Orlando Benton.....	51st regiment New York volunteers.
Frederick Steffin.....	52d regiment New York volunteers.
Aristide Sieran.....	53d regiment New York volunteers.
Herman Zundt.....	54th regiment N. Y. vol's (German Rangers.)
	55th, no chaplain on the rolls.
	56th, no chaplain on the rolls.
Abram Platt.....	57th regiment New York volunteers.
Frederick Herzberger.....	58th regiment New York volunteers.
Joseph Scudder.....	59th regiment New York volunteers.
Richard Eddy.....	60th regiment New York volunteers.
John Rossbaumes.....	61st regiment New York volunteers.
John Harvey.....	62d reg. N. Y. vol's (Anderson Zouaves.)
James M. Dillon.....	63d regiment N. Y. vols., (Irish brigade.)
Oliver D. Hibbard.....	64th regiment New York volunteers.
Peter H. Burghardt.....	65th regiment N. Y. volunteers, (Chasseurs.)
James H. Dwight.....	66th regiment New York volunteers.
S. Beecher.....	67th regiment N. Y. vols., (1st Long Island.)
Herman D. Wrege.....	68th regiment N. Y. vols., (Cameron Rifles.)
Thomas Willet.....	69th regiment N. Y. vols., (Irish brigade.)
Charles H. E. Bulkley.....	70th regiment New York volunteers.
Joseph H. Twitchell.....	71st regiment New York volunteers.
Levi W. Horton.....	72d regiment New York volunteers.
Joseph B. O. Hagan.....	73d regiment New York volunteers.
——— Boule.....	74th reg. N. Y. vols., (5th of Excelsior brigade.)
Thomas Hudson.....	75th regiment New York volunteers.
Hiram S. Richardson.....	76th regiment New York volunteers.
David E. Tully.....	77th regiment New York volunteers.
	78th, rolls not received.
A. Rizer.....	79th reg. N. Y. vols., (Cameron Highlanders.)
C. Van Santvoord.....	80th regiment New York volunteers.
	81st, no F. and S. roll received.
Stephen Baxter.....	82d regiment New York volunteers.
Benjamin T. Philips.....	83d regiment New York volunteers.
John S. Inskip.....	84th regiment New York volunteers.
Darwin E. Maxon.....	85th regiment New York volunteers.
Jonathan Watts.....	86th regiment New York volunteers.
William H. Williams.....	87th regiment New York volunteers.
William Corby.....	88th regiment N. Y. vols., (Irish brigade.)
Nathaniel E. Pierson.....	89th regiment New York volunteers.
Job G. Bass.....	90th regiment New York volunteers.
William R. Brown.....	91st regiment New York volunteers.
	92d, F. and S. roll not received.
Christopher H. Edgerton.....	93d regiment New York volunteers.
	94th, rolls not received.
Francis S. Wolfe.....	95th regiment New York volunteers.
William C. Hubbard.....	98th regiment New York volunteers.
	2d regiment, Eagle brigade, no chaplain.
Charles Reighly.....	1st reg. N. Y. vol. cavalry, (Lincoln reg.)
J. B. Davis.....	2d regiment New York volunteers, cavalry.
Ebenezer G. Townsend.....	3d regiment New York volunteers, cavalry.

——— Strickland.....	4th regiment New York volunteers, cavalry.
Robert Thompson.....	5th regiment New York volunteers, cavalry.
George D. Crocker.....	6th regiment New York volunteers, cavalry.
Joshua R. Davis.....	7th regiment New York cavalry.
John V. Van Ingen.....	8th regiment New York cavalry.
David M. Steever.....	9th regiment New York cavalry.
Robert Dade.....	10th regiment New York cavalry.
(Chaplains not borne on the artillery rolls of New York regiments.)	
Henry R. Pyne.....	1st regiment New Jersey cavalry.
Robert R. Yard.....	1st regiment New Jersey infantry.
Robert R. Proudfit.....	2d regiment New Jersey infantry.
George R. Darrow.....	3d regiment New Jersey infantry.
Norman W. Camp.....	4th regiment New Jersey infantry.
Thomas Sovereign.....	5th regiment New Jersey infantry.
Samuel T. Moore.....	6th regiment New Jersey infantry.
Julius D. Rose.....	7th regiment New Jersey infantry.
A. St. John Chambré.....	8th regiment New Jersey infantry.
Thomas Drumm.....	9th regiment New Jersey infantry.
Jacob B. Graw.....	10th regiment New Jersey infantry.
William H. Leake.....	3d regiment Pennsylvania reserved corps.
Edward S. Marks.....	4th regiment Pennsylvania reserved corps.
S. L. M. Couser.....	5th regiment Pennsylvania reserved corps.
Samuel Jessup.....	6th regiment Pennsylvania reserved corps.
William Eiken.....	8th regiment Pennsylvania reserved corps.
James B. Pyatt.....	9th regiment Pennsylvania reserved corps.
L. McGarther.....	10th regiment Pennsylvania reserved corps.
William F. Dickson.....	11th regiment Pennsylvania reserved corps.
Alexander M. Stewart.....	13th regiment Pennsylvania reserved corps.
W. H. Hatton.....	13th rifle regiment Pennsylvania reser'd corps.
William H. Locke.....	11th regiment Pennsylvania volunteers.
James G. Shinn.....	23d regiment Pennsylvania volunteers.
Charles E. Beck.....	26th regiment Pennsylvania volunteers.
John H. Reubelt.....	27th regiment Pennsylvania volunteers.
Charles Hiesley.....	28th regiment Pennsylvania volunteers.
Benjamin F. Sewell.....	29th regiment Pennsylvania volunteers.
Benjamin F. Reed.....	30th regiment Pennsylvania volunteers.
Robert W. Oliver.....	31st regiment Pennsylvania volunteers.
James F. Read.....	33d regiment Pennsylvania volunteers.
Louis Wittig.....	35th regiment Pennsylvania volunteers.
Francis Kockerity.....	40th regiment Pennsylvania volunteers.
William S. Gibson.....	45th regiment Pennsylvania volunteers.
John E. Rentee.....	46th regiment Pennsylvania volunteers.
William J. D. Rodrock.....	47th regiment Pennsylvania volunteers.
Samuel A. Holman.....	48th regiment Pennsylvania volunteers.
William Eamshaw.....	49th regiment Pennsylvania volunteers.
Daniel G. Mallesly.....	51st regiment Pennsylvania volunteers.
John H. Drum.....	52d regiment Pennsylvania volunteers.
Daniel Barker.....	53d regiment Pennsylvania volunteers.
	54th, no chaplain on the rolls.
	55th and 56th incomplete.
William T. McAdams.....	57th regiment Pennsylvania volunteers.
J. E. Fulton.....	61st regiment Pennsylvania volunteers.
Julius J. Marks.....	63d regiment Pennsylvania volunteers.
	66th, 67th, and 68th regiments incomplete.
Michael F. Martin.....	71st regiment Pennsylvania volunteers.
Gamaliel Collins.....	72d regiment Pennsylvania volunteers,

Ephraim Best.....	73d regiment Pennsylvania volunteers.
B. L. Agnel.....	76th regiment Pennsylvania volunteers.
John M. Thomas.....	77th regiment Pennsylvania volunteers.
Charles F. Stack.....	79th regiment Pennsylvania volunteers.
Stacy Wilson.....	81st regiment Pennsylvania volunteers.
Josiah Flower.....	83d regiment Pennsylvania volunteers.
Alexander McLeod.....	84th regiment Pennsylvania volunteers.
John Pierce.....	85th regiment Pennsylvania volunteers.
James M. Brown.....	87th regiment Pennsylvania volunteers.
Charles W. Clothier.....	88th regiment Pennsylvania volunteers.
Joseph Welsh.....	91st regiment Pennsylvania volunteers.
John W. Quinby.....	93d regiment Pennsylvania volunteers.
Samuel F. Colt.....	96th regiment Pennsylvania volunteers.
James E. Wilson.....	99th regiment Pennsylvania volunteers.
Robert A. Browne.....	100th regiment Pennsylvania volunteers.
William Whitehead.....	97th regiment Pennsylvania volunteers.
Henry Gyrel.....	98th regiment Pennsylvania volunteers.
William R. Gries.....	104th regiment Pennsylvania volunteers.
Daniel S. Stedman.....	105th regiment Pennsylvania volunteers.
William Harris.....	106th regiment Pennsylvania volunteers.
Jeremiah Shindel.....	110th regiment Pennsylvania volunteers.
William H. Hasler.....	112th regiment Pennsylvania volunteers, ar- tillery.
J. Hervey Beal.....	1st regiment Pennsylvania volunteers, cavalry.
Martin E. Hamstead.....	2d regiment Pennsylvania volunteers, cavalry.
Moses H. Hunter.....	3d regiment Pennsylvania volunteers, cavalry.
Washington B. Erlin.....	6th regiment Pennsylvania volunteers, cavalry.
James D. Turner.....	4th regiment Pennsylvania volunteers, cavalry.
Reuben E. Drake.....	7th regiment Pennsylvania volunteers, cavalry.
Edmond McKinney.....	9th regiment Pennsylvania volunteers, cavalry.
William H. N. Stewart.....	11th regiment Pennsylvania volunteers, cav- alry.
Thomas G. Murphy.....	1st regiment Delaware volunteers, infantry.
George M. Condon.....	2d regiment Delaware volunteers, infantry.
John McCramer.....	1st regiment Maryland volunteers, infantry.
Samuel Kremer.....	3d regiment Maryland volunteers, infantry.
John W. Bull.....	5th regiment Maryland volunteers, infantry.
Gordon Battelle.....	1st regiment Virginia volunteers, infantry.
James W. Curry.....	3d regiment Virginia volunteers, infantry.
George S. Woodhull.....	4th regiment Virginia volunteers, infantry.
Charles M. Bethausen.....	2d regiment Virginia volunteers, cavalry.
William H. Harnell.....	1st regiment Kentucky cavalry.
Matthew N. Losly.....	4th regiment Kentucky cavalry.
R. H. Gray.....	1st regiment Kentucky infantry.
James H. Bristow.....	3d regiment Kentucky infantry.
John W. Jacobs.....	2d regiment Kentucky infantry.
Timothy S. Paul.....	8th regiment Kentucky infantry.
Richard C. Nash.....	10th regiment Kentucky infantry.
Isaac Emerson.....	13th regiment Kentucky infantry.
J. McMillan.....	14th regiment Kentucky infantry.
Jeremiah Talbot.....	15th regiment Kentucky infantry.
George W. Kinsolring.....	17th regiment Kentucky infantry.
Asa Drury.....	18th regiment Kentucky infantry.
James Matthews.....	19th regiment Kentucky infantry.
William Morrison.....	21st regiment Kentucky infantry.
Samuel Sumner.....	22d regiment Kentucky infantry.
William A. Black.....	23d regiment Kentucky infantry.

Thomas H. Oakly.....	1st regiment Ohio artillery.	
Gaylord B. Hawkins.....	2d regiment Ohio cavalry.	
— Cheney.....	4th regiment Ohio cavalry.	
E. Y. Warner.....	3d regiment Ohio cavalry.	
Richard Pierce.....	5th regiment Ohio cavalry.	
Robert W. Landis.....	Merrill Horse, Ohio cavalry.	
George H. Fullerton.....	1st regiment Ohio volunteers, infantry.	
Maxwell P. Gaddis.....	2d regiment Ohio volunteers, infantry.	
E. A. Strong.....	3d regiment Ohio volunteers, infantry.	
Lorenzo Warner.....	4th regiment Ohio volunteers, infantry.	
Frederick T. Brown.....	7th regiment Ohio volunteers, infantry.	
Lyman N. Freeman.....	8th regiment Ohio volunteers, infantry.	
William Sturgeon.....	9th regiment Ohio volunteers, infantry.	
T. O. Higgin.....	10th regiment Ohio volunteers, infantry.	
R. B. Van Duersen.....	12th regiment Ohio volunteers, infantry.	
Anthony W. Smith.....	13th regiment Ohio volunteers, infantry.	
Edwin B. Raffensperger.....	14th regiment Ohio volunteers, infantry.	
Richard L. Ganter.....	15th regiment Ohio volunteers, infantry.	
Henry C. Skinner.....	21st regiment Ohio volunteers, infantry.	
Amos Wilson.....	23d regiment Ohio volunteers, infantry.	
A. F. Fullerton.....	17th regiment Ohio volunteers, infantry.	
L. H. Long.....	26th regiment Ohio volunteers, infantry.	
Alfred H. Brundage.....	32d regiment Ohio volunteers, infantry.	
John Eakon.....	27th regiment Ohio volunteers, infantry.	
Russel H. Hurlbut.....	29th regiment Ohio volunteers, infantry.	
Lemuel F. Drake.....	31st regiment Ohio volunteers, infantry.	
(Chaplain reported absent; name not given on roll of the 34th regiment.)		
John Woods.....	35th Ohio.	
George V. Fry.....	36th Ohio.	
Adolph Zurwich.....	37th Ohio.	
John Poucher.....	38th Ohio.	
Samuel E. Brewster.....	40th Ohio.	
Omer A. Lyman.....	41st Ohio.	
Jefferson H. Jones.....	42d Ohio.	
Thomas P. Childs.....	44th Ohio.	
Eurotus H. Bush.....	49th Ohio.	
Nicholas Worthington.....	51st Ohio.	
Thomas McIntyre.....	53d Ohio.	
John G. W. Cowles.....	55th Ohio.	
Andrew Lane.....	62d Ohio.	
Andrew R. Brown.....	64th Ohio.	
Andrew Burns.....	65th Ohio.	
Wilson R. Parsons.....	66th Ohio.	
Martin Perky.....	68th Ohio.	
M. Oliphant Todd.....	78th Ohio.	
William F. Wood.....	1st Indiana volunteers, cavalry.	2d Indiana.
	cavalry, no staff roll on file.	
Rezin M. Barnes.....	6th Indiana volunteers, infantry.	7th—chap-
	lain enrolled; name not given.	
Safety Layton.....	9th Indiana volunteers, infantry.	
George T. Dougherty.....	10th Indiana volunteers, infantry.	
Henry B. Hibben.....	11th Indiana volunteers, infantry.	
George W. Ames.....	18th Indiana volunteers, infantry.	
Louis Dale.....	19th Indiana volunteers, infantry.	
William C. Porter.....	20th Indiana volunteers, infantry.	
Nelson L. Brakeman.....	21st Indiana volunteers, infantry.	

John D. Rogers.....	23d Indiana volunteers, infantry.
Charles Fitch.....	24th Indiana volunteers, infantry.
Frederick A. Huring.....	25th Indiana volunteers, infantry.
Samuel R. Adams.....	26th Indiana volunteers, infantry.
Joseph C. Reade.....	29th Indiana volunteers, infantry.
Reuben F. Dealo.....	30th Indiana volunteers, infantry.
Hiram Gilmore.....	31st Indiana volunteers, infantry.
Wilhelm Schmidt.....	32d Indiana volunteers, infantry.
Francis A. Griswold.....	34th Indiana volunteers, infantry.
Peter Cooney.....	35th Indiana volunteers, infantry.
O. V. Lemon.....	36th Indiana volunteers, infantry.
John H. Lozier.....	37th Indiana volunteers, infantry.
Lewis E. Carson.....	38th Indiana volunteers, infantry.
A. S. Lakin.....	39th Indiana volunteers, infantry.
Amos Jones.....	40th Indiana volunteers, infantry.
Nathaniel P. Heath.....	43d Indiana volunteers, infantry.
D. C. Beeks.....	44th Indiana volunteers, infantry.
Robert Irvin.....	46th Indiana volunteers, infantry.
Samuel W. Sawyer.....	47th Indiana volunteers, infantry.
Elias Gaskin.....	51st Indiana volunteers, infantry.
Isaac W. Munfort.....	52d Indiana volunteers, infantry.
Thomas McWhinney.....	57th Indiana volunteers, infantry.
Joseph R. Locke.....	2d regiment Illinois volunteers, cavalry.
Horace M. Carr.....	3d regiment Illinois volunteers, cavalry.
Alfred Eddy.....	4th regiment Illinois volunteers, cavalry.
John W. Woods.....	5th regiment Illinois volunteers, cavalry.
Jesse P. Davis.....	7th regiment Illinois volunteers, cavalry.
Lucius C. Matluck.....	8th regiment Illinois volunteers, cavalry.
James I. Ferrie.....	9th regiment Illinois volunteers, cavalry.
William H. Collier.....	10th regiment Illinois volunteers, cavalry.
Leonard Whitney.....	11th regiment Illinois volunteers, cavalry.
Abner W. Henderson.....	13th regiment Illinois volunteers, cavalry.
Jesse Davis.....	7th regiment Illinois volunteers, infantry.
Lucius C. Matlack.....	8th regiment Illinois volunteers, infantry.
James I. Ferree.....	9th regiment Illinois volunteers, infantry.
H. W. Collins.....	10th regiment Illinois volunteers, infantry.
Benjamin F. Pierson.....	11th regiment Illinois volunteers, infantry.
Joel Grant.....	12th regiment Illinois volunteers, infantry.
Joseph C. Miller.....	13th regiment Illinois volunteers, infantry.
David Haltrimer.....	15th regiment Illinois volunteers, infantry.
Richard Haney.....	16th regiment Illinois volunteers, infantry.
Lewis Lambert.....	18th regiment Illinois volunteers, infantry.
Augustus H. Conent.....	19th regiment Illinois volunteers, infantry.
Charles Button.....	20th regiment Illinois volunteers, infantry.
Elias D. Weikines.....	21st regiment Illinois volunteers, infantry.
Philip Miner.....	25th regiment Illinois volunteers, infantry.
S. Yancy McMasters.....	27th regiment Illinois volunteers, infantry.
Bradley Hungerford.....	28th regiment Illinois volunteers, infantry.
Ziloter S. Clifford.....	29th regiment Illinois volunteers, infantry.
Williamson F. Boyakin.....	30th regiment Illinois volunteers, infantry.
Jacob Cole.....	31st regiment Illinois volunteers, infantry.
Asaph C. Vandewater.....	32d regiment Illinois volunteers, infantry.
Herman J. Eddy.....	33d regiment Illinois volunteers, infantry.
Michael Decker.....	34th regiment Illinois volunteers, infantry.
George G. Lyon.....	36th regiment Illinois volunteers, infantry.
Edward Anderson.....	37th regiment Illinois volunteers, infantry.

Preston Wood.....	38th regiment Illinois volunteers, infantry.
Charles S. Macreading.....	39th regiment Illinois volunteers, infantry.
Henry C. McCook.....	41st regiment Illinois volunteers, infantry.
John L. Wather.....	42d regiment Illinois volunteers, infantry.
George Irwin.....	44th regiment Illinois volunteers, infantry.
David Teed.....	46th regiment Illinois volunteers, infantry.
Jeremiah Haven.....	47th regiment Illinois volunteers, infantry.
Robert H. Manier.....	48th regiment Illinois volunteers, infantry.
—— Raymond.....	51st regiment Illinois volunteers, infantry.
Benjamin Thomas.....	52d regiment Illinois volunteers, infantry.
Matthew Vigger.....	50th regiment Illinois volunteers, infantry.
Louis Crouch.....	56th regiment Illinois volunteers, infantry.
Alexander Pfeifer.....	Conrad's battalion 3d regiment Missouri vol- unteers.
Samuel Huffman.....	6th regiment Missouri volunteers.
Thomas W. Jones.....	1st regiment, cavalry, Missouri volunteers.
Samuel D. Longhead.....	8th regiment, infantry, Missouri volunteers.
Nathan Shumate.....	9th regiment infantry, Missouri volunteers.
Joseph Brooke.....	11th regiment infantry, Missouri volunteers.
Albert Traws.....	12th regiment infantry, Missouri volunteers.
Herne Tehrman.....	17th regiment infantry, Missouri volunteers.
Alfred Powell.....	24th regiment infantry, Missouri volunteers.
—— Nute.....	1st regiment Kansas volunteers, infantry.
R. M. Fish.....	4th regiment Kansas volunteers, infantry.
Samuel Ayres.....	1st regiment Kansas volunteers, cavalry.
H. H. Mone.....	3d regiment Kansas volunteers, infantry.
James B. Latham.....	1st regiment Iowa cavalry.
Charles G. Truesdale.....	2d regiment Iowa cavalry.
Pearl P. Ingle.....	3d regiment Iowa cavalry.
Addison D. Medira.....	5th regiment Iowa infantry.
John Uffard.....	6th regiment Iowa infantry.
Cyrus G. Vanderver.....	8th regiment Iowa infantry.
Amos B. Kendig.....	9th regiment Iowa volunteer infantry.
David W. Tolford.....	10th regiment Iowa volunteer infantry.
John Steel.....	13th regiment Iowa volunteer infantry.
A. G. Uberhart.....	12th regiment Iowa volunteer infantry.
John S. Whittlesey.....	11th regiment Iowa volunteer infantry.
Samuel E. Benton.....	14th regiment Iowa volunteer infantry.
John McNamara.....	1st regiment Wisconsin volunteer infantry.
James Cook Richmond.....	2d regiment Wisconsin volunteer infantry.
William L. Mather.....	3d regiment Wisconsin volunteer infantry.
Alfred C. Berry.....	4th regiment Wisconsin volunteer infantry.
Robert C. Langley.....	5th regiment Wisconsin volunteer infantry.
Samuel L. Brown.....	7th regiment Wisconsin volunteer infantry.
N. A. Staples.....	6th regiment Wisconsin volunteer infantry.
William M. Kinley.....	8th regiment Wisconsin volunteer infantry.
John Bantley.....	9th regiment Wisconsin volunteer infantry.
James B. Britton.....	11th regiment Wisconsin volunteer infantry.
H. C. Tilton.....	13th regiment Wisconsin volunteer infantry.
Jonathan Hudson.....	1st regiment Michigan cavalry.
Francis Drew.....	2d regiment Michigan cavalry.
Joel Kennedy.....	3d regiment Michigan cavalry.
Arthur Edwards, jr.....	1st regiment Michigan infantry.
Franklin May.....	2d regiment Michigan infantry.
Francis Cummings.....	3d regiment Michigan infantry.
Henry Strong.....	4th regiment Michigan infantry.

Daniel C. Jaokes.....5th regiment Michigan infantry.
Addison K. String.....7th regiment Michigan infantry.
William Mahon.....8th regiment Michigan infantry.
James G. Portman.....9th regiment Michigan infantry.
Holmes A. Patterson.....11th regiment Michigan infantry.
William H. Brockmay.....Stockton regiment Michigan volunteers.
A. D. Neill.....1st regiment Minnesota volunteers, infantry.
Timothy P. Cressey.....2d regiment Minnesota volunteers, infantry.

No chaplains appear on the California rolls.

AFRICANS IN FORT MONROE MILITARY DISTRICT.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

Resolution of the House, transmitting a report of Major General Wool, on the number, age, and condition of the Africans in his district.

MARCH 25, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., March 25, 1862.

SIR: I have the honor to communicate the accompanying letter and report for Major General John E. Wool, in answer to the resolution of the House of Representatives.

Your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

HEADQUARTERS DEPARTMENT OF VIRGINIA,
Fort Monroe, Virginia, March 22, 1862.

SIR: I have the honor to transmit herewith, in conformity to a call by a resolution of the House of Representatives, a report of the number, age, and condition of the Africans in this department.

The information which it contains is, I believe, in all respects strictly correct, and has been obtained by three commissioners: Colonel T. J. Cram, Colonel Le Grand B. Cannon, and Major William P. Jones, aides-de-camp on my staff, after a very rigid examination and investigation under department General Orders No. 5, dated January 30, 1862, herewith appended.

All which is respectfully submitted.

I have the honor to be, very respectfully, your obedient servant,

JOHN E. WOOL,
Major General.

Hon. EDWIN M. STANTON,
Secretary of War.

SPECIAL ORDERS, } HEADQUARTERS DEPARTMENT OF VIRGINIA,
No. 72. } *Fort Monroe, Virginia, October 14, 1861.*

All colored persons called "contrabands," employed as servants by officers or others residing within Fort Monroe, or outside of the fort, Camp Hamilton and Camp Butler, will be furnished with their subsistence, and at least eight dollars per month for males, and four dollars per month for females, by the officers or others employing them.

So much of the above-named sums as may be necessary to furnish clothing, to be decided by the commanding officers of Fort Monroe, Camp Hamilton, and Camp Butler, will be applied for that purpose, and the remainder will be paid into the hands of the chief quartermaster, to create a fund for the support of those "contrabands" who are unable to work for their own support.

All able-bodied colored persons who are under the protection of the troops of this department, and who are not employed as servants, will be immediately put to work, in either the engineer's or quartermaster's departments.

By command of Major General Wool.

WM. D. WHIPPLE,
Assistant Adjutant General.

GENERAL ORDERS, } HEADQUARTERS DEPARTMENT OF VIRGINIA,
No. 34. } *Fort Monroe, November 1, 1861.*

The following pay and allowances will constitute the valuation of the labor of "contrabands" at work in the engineer, ordnance, quartermaster, commissary, and medical departments at this post, to be paid as hereinafter mentioned:

Class 1. Negro men over 18 years of age, and able-bodied, ten dollars per month, one ration, and the necessary amount of clothing.

Class 2. Negro boys, from 12 to 18 years of age, and sickly and infirm negro men, five dollars per month, one ration, and the necessary amount of clothing.

The quartermaster will furnish all the clothing. The departments employing these men will furnish the subsistence specified above, and as an incentive to good behavior, (to be withheld at the discretion of the chiefs of the departments, respectively,) each individual of the first class will receive two (2) dollars per month, and each individual of the second class, one (1) dollar per month, for their own use.

The remainder of the money valuation of their labor will be turned over to the quartermaster, who will deduct from it the cost of the clothing issued to them; the balance will constitute a fund to be expended by the quartermaster, under the direction of the commanding officer of the department, for the support of the women and children, and those that are unable to work.

For any unusual amount of labor performed, they may receive extra pay, ranging in amount from fifty (50) cents to one (1) dollar; this to be paid, by the departments employing them, to the men themselves, and to be for their own use.

Should any man be prevented from working on account of sickness for six consecutive days, or ten days in any one month, one-half the money valuation will be paid. For being prevented from laboring for a longer period than ten days, all pay and allowances cease.

By command of Major General Wool.

WM. D. WHIPPLE,
Assistant Adjutant General.

GENERAL ORDERS, }
No. 5. }

HEADQUARTERS DEPARTMENT OF VIRGINIA,
Fort Monroe, January 30, 1862.

I. Colonel T. J. Cram, inspector general, and Major Le Grand B. Cannon, aide-de-camp, are hereby appointed and constituted a commission, for the purpose of making a critical examination of the condition of the persons known as vagrants or "contrabands," who are employed in this department, under department General Orders No. 34, of 1861, in reference to their pay, clothing, subsistence, medical attendance, shelter, and treatment, physical and moral.

II. Chiefs of the several departments, their subordinates and employés, will furnish to the commission such reports and information as the commission may require, to enable it to perform the duties imposed, the object being to do justice to the claims of humanity, in a proper discharge of the grave responsibility thrust upon the military authorities of this department, in consequence of numerous persons (men, women, and children) already congregated and daily increasing, being abandoned by their masters, or having fled to this military command for protection and support.

III. The commission will also examine into the condition of such of the foregoing specified class of persons as have been or are employed under department Special Orders No. 72, of 1861, and will further examine whether the several chiefs of departments have a sufficiency or an excess of employés or laborers to enable them to discharge their respective duties, and if a greater or less number than are now employed can be economically employed for these duties.

It having been reported that the said class of persons known as vagrants or contrabands have not been properly treated in all cases by those having them in charge, the commission cannot be too rigid in its examination, in order that justice may be done to them as well as to the public service.

IV. The results of the investigations will be reported by the commission to these headquarters as early as practicable, with such suggestions as the commission may deem proper for the improvement of the treatment and management of these persons; and the commission is authorized to employ such clerical assistance as it may need, to be detailed from this command.

By command of Major General Wool.

WM. D. WHIPPLE,
Assistant Adjutant General.

GENERAL ORDERS, }
No. 6. }

HEADQUARTERS DEPARTMENT OF VIRGINIA,
Fort Monroe, February 4, 1862.

Major William P. Jones, aide-de-camp, is appointed a member of the commission constituted by department General Orders No. 5, of the 30th ultimo.

By command of Major General Wool.

WM. D. WHIPPLE,
Assistant Adjutant General.

HEADQUARTERS DEPARTMENT OF VIRGINIA,
Fort Monroe, March 20, 1862.

The commission appointed under General Orders Nos. 5 and 6 have the honor respectfully to report:

As the orders related more especially to persons in this military department known as "vagrants or contrabands," embracing their relations to the military power as an economy and a duty, and also the question as to how far their

condition might be improved in connexion with the military authority, the commission started with the general proposition that the military power has not only the right but it is among its highest duties to avail itself of any and all means within its control to perfect its discipline, render its position secure, or make it effective for an advance against an enemy; and for these ends it has the right to compel service or use from anything, animate or inanimate, which a military necessity may demand. At the same time they consider that necessity is the only proper measure of the extent to which such power should be exercised.

The commission proceeded upon the basis of requiring from the several chiefs of departments of your command, and also from all others who had had official intercourse in any way with these people, reports of the number of "vagrants or contrabands" employed, and such other information as your orders Nos. 5 and 6 contemplated.

Full reports and tabular statements have in most instances been promptly rendered, with a mass of information, and all of which the commission have carefully examined. These reports and statements have been preserved, and can be referred to at any time required.

The General Order No. 5 calls for special information under the following heads, viz: Clothing, subsistence, shelter, medical attendance, treatment, physical and moral, and also the economy to the government in its use of the labor of these people; likewise such suggestions as the commission may deem proper for the improvement and management of these people.

I. CLOTHING.

The commission made a personal examination and inspection of the clothing purchased by the quartermaster for these people under special orders from the War Department, and report that the usual kind of clothing provided at the south on the plantations it was stated could not be obtained ready-made, but that quite a variety has been obtained, generally of a fair quality, and purchased at prices not considered excessive; shoes were sufficient, and at prices reasonably low.

A very considerable quantity of clothing had been sent by charitable persons to be dispensed, which the quartermaster represents he has in all cases issued to women and children, especially to those who gave no equivalent to the government in the way of labor or otherwise. In many cases, however, the commission find that those who have labored have not received a sufficiency of clothing to which they were entitled under General Order No. 34.

With funds derived from the labor of these persons the quartermaster, it appears, has purchased for and issued clothing to them up to 28th February amounting to \$5,526 92, and shoes to the amount of \$834 80.

II. SUBSISTENCE.

General Order No. 34, of 1861, provides, as a part of compensation to the laborers, that each shall receive one soldier's ration per day. These were issued by the commissary department to Sergeant Smith, who had been assigned to the duties of superintendent of the "vagrants or contrabands." From the reports of chiefs of the departments we find the number of full rations issued for those who did and those who did not work for the government, also the number making full time of daily labor, and present them in the following table:

Month.	No. of rations per day issued for all.	No. of contrabands working for departments.					Total No. of laborers employed.
		Quartermaster.	Commissary.	Engineer.	Ordnance.	Medical.	
November	658	353	20	41	18	22	453
December	821	359	20	34	16	22	451
January	478	321	19	17	13	22	392
February	506	311	19	15	16	22	383

Besides these full rations additional issues of bread rations were drawn in the four months to the number of 772. It also appears that, besides the above, rations have been issued to thirty-seven women, laundresses to the colored laborers; also to about sixty children, the latter returning no equivalent to the government.

Again, from the report of the provost marshal at Camp Hamilton, it appears that for the five months ending 1st January last, he had drawn rations amounting to about 383 per day, which were issued to about 650 women and children and old, infirm men, all of whom returned little or no equivalent to the government. But since the first of January, the rations issued there have not exceeded seventy, and for part of the time were less than forty per day. As a consequence, those have been thrown very much on their own exertions to provide for themselves; and the commission, on inquiry, do not find that any amount of suffering has ensued, but that in many instances the effort at self-support has been successful and improving.

At Newport's News it appears that the larger number of this class of blacks are in the service of officers, or supporting themselves by trading, oystering, &c., the government furnishing rations to none not returning an equivalent in labor. Subsistence to those who labor for the government is all that is required under orders Nos. 34 and 72, and it is believed that they are doing well for themselves. Indeed, this portion of your command, not being taxed by the wants of the young and infirm, presents the best aspect of the condition of these people.

The commission made a personal examination of the mess-rooms and kitchens in the quarters outside the fort, and also attended at their meals. The mess-tables are well arranged, the kitchens provided with ranges and all necessary cooking utensils, with a sufficient force of cooks.

On inquiry of these people as to the sufficiency of their food, the commission are satisfied that, in many instances, they have had good cause for complaint. The quality is the usual soldiers' ration, but they have been restricted in quantity, and in some instances refused meals altogether. This violation of their rights is solely to be attributed to the superintendent, Sergeant Smith, but since his removal, this wrong has been corrected, and no complaints on this point have been made.

An examination of these contrabands in regard to the treatment they had received resulted in the arrest and investigation generally of the acts of said Smith. It appeared, by his own admissions and other evidence, that he had withheld a portion of the rations provided under General Order No. 34; sold them to sutlers, and, in one instance, to a citizen, at about one-half their cost price to the government, and misappropriated the funds.

The gross amount he realized from these fraudulent sales, as far as the commission were able to discover, is about \$550, a portion of which was expended

in purchasing tobacco and some utensils necessary for the negro mess, amounting to about \$250. One hundred and fifty dollars was refunded by said Smith in money; the balance has not been accounted for.

The purchases he made of a sutling firm in exchange for the rations he sold were largely overcharged. The whole transaction between Smith and this firm shows that the rations were sold under cost price, in about the same ratio as the articles bought were in excess of the current cash prices, evincing a piece of sharp practice, by which the government and negroes were defrauded, and the sutlers made an unwarrantable profit. The commission would remind the general commanding that this sutler firm was located a little outside the fort, in virtue of special authority emanating from the late honorable Secretary of War, with the privilege of erecting their store on public ground.

The sale of rations to the post sutler by Smith, at about the same low rates as to the firm just mentioned, is justified by the said post sutler, on the ground that he has been, and is continually, buying company's savings at the same rates. There is no evidence that he overcharged on articles sold, as his purchases of Smith were generally paid for in cash. Smith also admits selling a barrel of flour to a woman, and three to a baker in Camp Hamilton, at \$7 25 per barrel. It is proper to state here that Sergeant Smith made these sales in direct violation of the orders of the quartermaster, who had instructed him to turn in all savings to the quartermaster's department, and have their value credited to the contraband fund.

III. SHELTER.

Two large, commodious buildings have been erected by the quartermaster's department for the use of the contrabands, who are employed in the various army departments, as quarters, which are fitted with a double tier of bunks on the first and mess-room floor, and a double tier in the second story. These quarters are thoroughly ventilated, and capable of lodging and messing three hundred males each. The cooking arrangements are all that could be desired, the buildings well policed, in all respects unexceptionable, and fully equal to the best of soldiers' barracks. Another building has also been erected by the same department as quarters for the families of contrabands, capable of accommodating about forty families, provided with kitchens, a common mess-room, and a commodious wash-room. The cost of all these quarters, including a hospital building, (to be noticed under head IV,) has been about \$4,550, as shown by the quartermaster's report, all having been erected at public cost, and not charged to the contraband fund.

At Newport News those who are in the quartermaster's employ are sheltered in log huts, and quite as well provided for in this respect as the troops at that post. Several buildings, deserted by their owners, who are known or supposed to be in the rebel army, are occupied by "vagrants or contrabands" in and about Camp Hamilton and Hampton bridge. In most instances too many persons are thus congregated under one roof, which, from the small number of buildings in the vicinity, cannot well be avoided. These buildings have been taken possession of by these people of their own accord in their necessities; but the tenements have been inspected by the military authorities of this department for police and disciplinary purposes.

IV. MEDICAL ATTENDANCE.

From the report of the medical director of the department rendered to the commission, and from other reliable evidence, it is evident that upon this point there has been no cause of complaint; and the commission have pleasure in stating that the post and brigade surgeons, especially the brigade surgeon at

Camp Hamilton, have voluntarily rendered advice and furnished medicines whenever the wants of the people required them. In his report the medical director of the department strongly urged that a surgeon should be appointed to attend especially on the people; and since the commission was raised, a surgeon has been appointed, under special authority from the President, by the general commanding, and especially assigned to, and is now in, the active discharge of this duty. From the report of this medical gentleman, it is apparent to the commission that a high average of health obtains amongst these people. A hospital has been built by the quartermaster's department for them, located (outside the fort) on a convenient and eligible site as regards health and neighboring buildings, and provided with sick wards, kitchen, store-rooms, and a comfortable lying-in room, and is in all respects equally as well appointed as a hospital for soldiers.

V. PAY.

Your Special Order No. 72 does not fix limits to wages to be allowed other than to prescribe the least at which they were permitted to be employed by the departments as well as by officers and civilians connected with the service, thus manifesting an effort to prevent their labor from being appropriated without compensation. By the report and tabular statement of the clerk keeping the accounts of the men employed, and attending to the issuing of clothing in the quartermaster's department, requiring a large amount of labor, which, it is believed, he has faithfully performed, the commission nevertheless regret to be obliged to present that these people have not only not been regularly paid their monthly allowance of two dollars, provided under General Order No. 34, but in most or very many instances they have received but a very small, and in some instances no part of their dues. The commission present this forcibly as a negligence for which they can find no proper excuse; this will also hold good for sums due for extra labor; likewise in many cases where they have been employed as private servants.

From the quartermaster's statement of receipts, expenditures, and dues submitted to the commission, it appears that on the 28th day of February, 1862, there was due, for the labor of all kinds contemplated in your Special Order No. 72, the sums following, viz :

From those officers and civilians who have not paid for their labor as servants	\$1, 472 54
From hospitals for labor in the hospitals	504 00
From the quartermaster's department a balance, as per his statement, in hand	7, 474 78
From those employing them on extra labor	982 50
Total	10, 433 82

Your commission are not informed that any accounts have been kept in any of the departments, or that any payments have been made for the labor of these people prior to the operation of General Order No. 34, though it has come forcibly to the knowledge of the commission that many of them had previously worked months in these departments, receiving only subsistence and shelter for their services. To refuse further compensation would be manifestly unjust, and your commission have no hesitation in recommending that all so employed shall receive compensation tantamount at least to the provisions of General Order No. 34, antedating to the commencement of such service, and coming down to the date of said order.

VI. TREATMENT, PHYSICAL AND MORAL.

The commission approach this subject with more embarrassment than any other. It suggests that the moral condition of a people or a class depends upon their physical treatment, and that their status, or rather, as in the present instance, their want of status, largely influences both their moral and physical conditions. The commission also consider that these persons are not surrounded by an influence which is best calculated to ameliorate their physical treatment or improve their moral condition, as it would be difficult to prove that the contact of an army in the process of perfecting its own discipline creates inducements tending to the improvement of society or elevation of the standard of civilization. These persons are thus being tried under difficulties and circumstances of great disadvantage.

The commission find that since you assumed command of this department, (August 17, 1861,) no order has been issued restricting the free exercise of the rights of these persons to enter within, or depart beyond, the military limits, differing from those imposed on all other non-combatants, and no other prohibition, except they, the blacks, were compelled, by virtue of General Order No. 34, and Special Order No. 72, to work for the several departments, or support themselves, to prevent irretrievable vagrancy, and a continued tax upon public charity. The commission deem it their duty to present this fact prominently, as a false impression exists on this important point.

In regard to the kind and amount of work it is clear to the commission that the several military departments have employed them generally for the performance of such work as would have been required of a body of equal number of white laborers. It has been customary to turn them out at an early hour, in the usual manner as with troops; cause them to make up their beds; police in and around their quarters; get breakfast; and be ready for work at seven in summer and seven and a half o'clock in winter. At these appointed hours the roll is called, and the different parties told off in squads, some for labor on the wharves, others with the blacksmiths, carpenters, and at the various store-houses, precisely in the same manner as white laborers would have been conducted. As to the number of hours per day for labor they have been governed in this respect by the bells of the departments calling to and from work, and labored, (as whites have done,) ten hours in summer and eight in winter. When called out at night, as they frequently have been to labor, they have had extra pay credited to them.

Several instances have been reported of harsh treatment by those having the superintendence of them. The commission gave these cases, in accordance with your instructions, careful and minute investigation, taking evidence principally from whites, and are fully persuaded that most of the worst of these would not have occurred had their superintendence been entrusted to a civilian—a man of education, policy in the management of men, and actuated by a desire to benefit their condition and elevate their self-respect, instead of degrading it to a lower level than it was before. The citations of the cases and the evidence to sustain them have been submitted to the general commanding, who has not failed to notice them promptly in a manner which your commission believe will prevent similar abusive treatment and flagrant violation of natural rights.

In regard to moral treatment, schools have been in successful operation at Camp Hamilton under the charge of a clergyman, assisted by other teachers, black and white, where children and adults are daily instructed in reading, writing, and the elements of arithmetic; also, religious instructions and meetings are regularly held on Sunday and stated evenings during the week. It is gratifying to the commission to be able to express their belief that encouraging progress is making in these important duties, for details of which reference may

be made to the reports of the reverend gentleman and the provost marshal of Camp Hamilton. No regular school is established in or about the fort for the want of a site, the vicinity of the fort being so crowded with buildings that the necessity of demolishing many used as storehouses has been seriously contemplated, as they interfere with the range of the guns. Until the new ground, now being made, shall be finished, and which then could be appropriated for a site, the commission recommend the temporary use, by some proper teacher, of the quarters of the contrabands for childrens' schools, between the hours of eight and eleven, and two and five in the afternoon, and the hours between seven and nine in the evening for adults; and for divine service at proper hours on Sunday.

VII. ECONOMY OF THIS LABOR TO THE GOVERNMENT.

The commission have made diligent inquiries of the several departments employing these "vagrants or contrabands," as to the economy of their labor in comparison with the ordinary labor of whites. In one instance, men selected with care and their fitness for special work, (about one hundred and twenty-five men, the largest number embodied for special work of stevedores in the quartermaster's department,) it is admitted they perform as much as white laborers. In another case—a squad repairing the railroad—it is conceded does about three-fourths as much as an equal number of whites; and your commission are of the opinion that this latter estimate could be safely counted upon as the relative amount of labor of these people, taking them on the average. It must be remembered, however, that these people, from their previous habits of life and present condition, have not the same incentive to industry as whites who have absolute control of the wages of their labor, and are otherwise unrestricted in freedom of action.

A tabular statement of the cost of this labor to the government for the past four months is here submitted, premising that, in the item of subsistence, rations issued to those who did not work are reckoned against those who did work, in addition to the rations allowed to these last; thus divesting the question from all idea of charity from the government.

Month.	No. of laborers employed per day.	Cost of subsistence of each per day.	Wages per month per man.	Subsistence per month per man.	Cost of wages and subsistence to the government per man per month.
November	453	\$0 34 ³ / ₈	\$10 00	\$10 29	\$20 29
December	451	32 ³ / ₈	10 00	10 17	20 17
January	392	22 ³ / ₈	10 00	6 82	16 82
February	383	18	10 00	5 01	15 04

This estimate is exclusive of cost of clerk hire for keeping accounts, management, shelter, and other incidental expenses. This is certainly a very low price, as the quartermaster's department has heretofore paid per month \$25 and one ration per day for similar labor, making the cost \$30 10 per month, shelter being furnished besides. It will be recollected that the number of rations issued to indigents and young in Camp Hamilton, fell off after January 1, to about fifty per day. This is the cause of the reduction of the cost of the labor per month, for January and February.

In considering this question of economy, it is proper to present that at first resort was had to enlisted men from the volunteer regiments for details of working parties, but it was found impossible to get any valuable amount of such service out of them, which is not to be wondered at. It must also be considered that, with the demands of the army for enlistments, it would have been very difficult and expensive to have obtained from any source a sufficient force of white labor to do the service required, and which has been performed by these contraband blacks. The quartermaster informs the commission that it is with considerable difficulty he can get a sufficiency even of this kind of labor, as these people desire to engage in the service of officers, civilians, or work for themselves. It is fair to conclude, therefore, that superior inducements are offered by private than public service.

VIII. CENSUS.

The commission submit a census of "vagrants or contrabands," though it was not required in your order, yet in considering the questions embraced, it is deemed important. The table of census submitted below is not supposed to be entirely accurate. It is estimated, however, that about one hundred are employed with officers, sutlers, and traders. Lately very few have come within our lines, and these singly and in small parties, and not as heretofore in large squads. A considerable number have taken service in the navy, some have gone off as servants to officers going south in the volunteer service, and quite a number have disappeared, going to parts unknown to the commission. There seems to be little inclination among them to leave here to go north. Service in the navy is decidedly popular with them. The navy rates them as boys; they get \$10 a month, and are entitled to all the privileges of ships' crews, and besides, have absolute control of the earnings of their own labor, which must operate as a powerful incentive to prefer the sea to the land service, when in the latter only \$2 per month is the amount they realize.

Place.	Adult		Children		Total		Aggregate of males and females.
	Male.	Female.	Male.	Female.	Male.	Female.	
Fort Monroe.....	387	117	93	94	480	211	691
Camp Hamilton	191	224	161	167	352	391	743
Camp Butler, Newport News	74	-----	-----	-----	74	-----	74
	652	341	254	261	906	602	1,508

IX. SUGGESTIONS FOR THE IMPROVEMENT OF THEIR CONDITION.

Your commission, after a careful review of the reports and suggestions accompanying them, and a personal examination of the condition of these people, also after an examination of the laws of Congress, together with the question of military necessity, are forced to the conclusion that the practical working of the system inaugurated is highly objectionable, mainly wrong, and now entirely unnecessary.

1st. *Want of power.*—Without discussing the laws of Congress bearing on this subject, the question of State rights, or anything covering the question of title, which are matters entirely to be determined by civil power, though all of which might with propriety be considered, if necessary, even by a military com-

mission, your commission believe there is want of authority in government to hold these people, and compel them to be the recipients of its charity.

2d. *Military necessity*.—We suppose it cannot be urged as a military necessity to retain them, for identically the same voluntary labor can be obtained at as cheap or a less rate. It will hardly be denied that more is not performed by a person who has a voice in the wages of his labor than one who has not; besides, the military necessity could not extend to the women and children and those who are sick and infirm. The position of all would be one of *quasi* slavery, without being compelled to do their full work.

But admitting the military necessity of using those whose labor the military power requires, where is the authority for fixing a price by which others may employ them, using the wages of such labor to support those who do not or cannot support themselves?

The plan of giving the same pay to all alike is discouraging to the skilful, honest, industrious laborer, who fully earns his wages, while it only confirms the lazy and shiftless in their laziness. There is no motive for the industrious to labor with diligence in his regularly-appointed task. No matter how great their industry, or perfect their skill, they can gain no more than the slothful or unskilful; and if they are not absolute drones, they may get as much as if they gave their best exertions to the task. There is no incentive to ambition to prove themselves good workmen. Is it just to make the industrious and single work to accumulate a fund to support the lazy man's family? It is no argument against these people's ability to provide for themselves, that under their discouragements they do not show an activity as great as the white man under the incentive of proportional remuneration; for if white men were placed in the same situation, who can prove the result would not be the same?

It is destructive to the energies of an individual or a people, to assume them of charity whenever they apprehend difficulty. Witness the effect of Irish soup houses, and all "socialistic institutions." Better by far to let one here and there fall by the way-side, than to encourage the hope that the Herculean arm of the nation is to be wielded in clearing their path.

3d. The demands for government labor at this post is limited, but the government would have, as its arms advance, almost no limit to the demands on its charity. The system is, therefore, incapable of expansion, and cannot, from its very expensiveness to government, be carried on with a much larger number. Is it well to establish a precedent for the benefit of an inferior race which has always been refused, and cannot be granted to a superior race; and thus to establish a system that would be quoted against the government by all parties—by its foes for its failures, by its friends for its expense, and by the recipients of its charity because it was not continued, and taught them to rely on a hope which could not be realized?

As a verification of the force of our argument, reference is made to the tabular statement under head VII, from which it will be found that for the months of November and December the number of rations issued to women and children and the infirm brought the cost of subsistence on those who labored to 33½ cents per capita per day; and in the months of January and February, when, it will be recollected, these issues to women and children were very largely suspended, the cost of subsistence on those who labored was 20 cents per capita per day. This decreased cost of labor is owing entirely to a curtailment of this charity, which compelled these people to rely upon their own exertions, and yet no distress has occurred in consequence.

4th. Your commission are assured, by educated and philanthropic gentlemen, that there is no necessity for any governmental charity to these people; that societies at the north will undertake to provide for all their proper wants, in connexion with their moral and intellectual culture. We earnestly recommend

that it be left, as government leaves all similar demands, to the intelligence and generosity of the people.

The commission also recommend, as suggested under head VI, the use of the contrabands' quarters, near the fort, to be granted, under the direction of a person who may be appointed as their superintendent, for daily schools for children, and evening schools for adults, and for divine service on Sundays; providing that the hours selected for these purposes shall not interfere with messing and hours of labor for the men, and always subject to the military authorities. They also recommend, as indicated in VI, that a site be granted for the purpose of erecting a school-house and chapel, providing that all structures erected for them be built and sustained without expense to the government, and to be removed whenever the military authorities require, without claim on the government for such removal; that all blacks or "contrabands" not in the employ of the government, of officers, or others, connected with the military service at the fort, be removed, if they remain in this vicinity, beyond Mill creek; that no more buildings be erected at the government expense except for the shelter of those who are in government service; that the wages of their labor be paid to these people for their own use and enjoyment, prices to be determined by individual skill, industry, and ability, and regulated by supply and demand, or by any other standard system which governs the departments of the army; as part of the compensation, that each laborer receive one ration per day, and quarters in all respects similar to the usages heretofore obtaining with white or black free labor.

5th. The commission would earnestly recommend the appointment by government, or the commanding general, of a person (as already indicated) always subordinate to the military authorities, though unconnected with the military service—a man of elevated moral character, high social position and intelligence, who would consent to serve from motives of philanthropy; such a person would be most fit, and recommend that the military authorities protect him in all proper efforts to improve these people physically, morally, and religiously; to inculcate the virtues indispensable to this end, such as honesty, industry, temperance, economy, patience, and obedience to all rightful authority, leaving out of the question their social and political rights, believing that these questions belong more properly to the government.

6th. Your commission would likewise urgently recommend the appointment, by the proper authority, of a provost judge, who, clothed with civil power and military authority, could protect these ignorant people from abuse to their persons, and enforce the recovery, from all who employ them, of their just dues.

This officer is also indispensably necessary in this military department, in the absence of all civil law, to protect loyal citizens from continual marauding by the soldiers and negroes.

All officers, soldiers, and attachés of the army, who have had the services of these people, should be compelled to pay them the wages of their labor, by virtue of Special Order No. 72.

7th. Your commission are aware that these suggested reforms conflict in a considerable degree with the present system, which was doubtless the plan of a benevolent and patriotic heart, and perhaps the best that could be devised for the time being. It was a new thing to all, beset with difficulties and antagonisms on all sides, but, like all systems, requiring practical results to develop its weak points, and time to remedy its errors.

In conclusion, your commission are conscious of having taken much time in the examination of this most delicate but interesting question, but feel a consciousness that they have founded their opinions entirely upon facts presented.

We, the undersigned commission, have the honor to be, with the highest consideration, your most obedient servants,

T. J. CRAM,
Colonel A. D. C., Acting Inspector General.
LE G. B. CANNON,
Colonel U. S. A. and A. D. C.
WM. P. JONES,
Major U. S. A. and A. D. C.

Major General JOHN E. WOOL,
Commanding Department of Virginia.

GENERAL ORDERS, }
No. 22. }

HEADQUARTERS DEPARTMENT OF VIRGINIA,
Fort Monroe, Va., March 18, 1862.

I. The chiefs of the engineer, ordnance, medical, subsistence, and quartermaster's departments, employing vagrants or persons known as "contrabands," by virtue of General Orders No. 34, also all officers, sutlers, citizens, and others employing them by virtue of Special Orders No. 72, will forthwith report the names of such vagrants or persons called "contrabands," together with the names of any heretofore employed by them, to Mr. Charles B. Wilder, who has been appointed to superintend all things relating to and necessary for their welfare and condition.

The chiefs of the several departments will furnish to the superintendent, Mr. Wilder, a statement of the amounts paid, and amounts remaining due to each person so employed by them, under the following heads, viz:

- 1st. Amount earned by each.
- 2d. Amount paid in clothing to each.
- 3d. Amount paid in money to each.
- 4th. Amount earned for extra labor by each.
- 5th. Amount paid in money for extra labor to each.
- 6th. Amount due for extra labor to each.
- 7th. Gross amount due for monthly and extra labor to March 15, 1862, inclusive.

In addition to which a return will be made, embracing all labor performed by "contrabands" in the several departments anterior to Special Orders No. 72 and General Orders No. 34, and the amount, if any, paid to them during the same.

II. Special Orders No. 72 and General Orders No. 34 are hereby revoked, to take effect on and after March 15, 1862.

Hereafter all wages earned by persons of African blood in this department will be paid to them for their own use and support, under such regulations as may be devised by the superintendent; prices to be determined by individual skill, industry, and ability, and regulated by the standard usual in such cases, which may govern the several departments of the army at and near Fort Monroe.

As a part of the compensation, each laborer will receive one ration per day and quarters, until otherwise ordered.

The fund raised by Special Orders No. 72 and General Orders No. 34, in the hands of Captain Tallmadge, or any other person, for the support of the poor and needy of the so-called "contrabands," will be used for that purpose, or any other purpose which may be necessary for their benefit or comfort, under the direction of the superintendent, with discretionary powers, but subject to the approval of the military commander of this department.

By command of Major General Wool.

WILLIAM D. WHIPPLE,
Assistant Adjutant General.

HEADQUARTERS DEPARTMENT OF VIRGINIA,
Fort Monroe, March 22, 1862.

Captain Tallmadge, chief quartermaster, will pay the "contrabands" who have been employed for government purposes.

He will also deliver the clothing on hand intended for the "contrabands," and the money in his hands, to be appropriated out of the earnings of the "contrabands" for the benefit of the poor and needy of these people, to Mr. C. B. Wilder, appointed superintendent and agent under General Orders No. 15.

JOHN E. WOOL, *Major General.*

EXPENDITURE OF THE CONTINGENT FUND IN THE NAVY
DEPARTMENT.

LETTER

FROM

THE SECRETARY OF THE NAVY,

WITH

A detailed statement of the expenditure of contingent fund of the Navy Department for the year ending June 30, 1861.

MARCH 25, 1862.—Laid on the table, and ordered to be printed.

NAVY DEPARTMENT, *March 24, 1862.*

SIR: In compliance with the twentieth section of the act of August 26, 1842, I have the honor to transmit herewith a detailed statement of the expenditure of the contingent fund of the Navy Department and its several bureaus for the fiscal year ending June 30, 1861.

I am, sir, very respectfully, your obedient servant,

GIDEON WELLES.

HON. GALUSHA A. GROW,
Speaker of the House of Representatives.

CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, and the bureaux of the Navy Department, for the year ending June 30, 1861.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860.				
July 10	Francis Lamb	1 oak frame and glass		\$6 50
July 13	W. D. Wallach	Advertising proposals for stationery		44 00
	C. Wendell	Stitching 6 copies Navy Yard Investigation	\$1 50	
		Putting titles on 6 volumes Enlistments	1 50	
		Putting titles on 2 Record Books	1 50	
		Binding 2 volumes Secretary's Report	1 50	
		Binding 1 volume	75	
24	George W. Bowman	Advertising stationery proposals	38 00	5 75
		Advertising notice to officers	1 00	
31	William Pierre	Services as laborer in July		39 00
	William H. Birch	Livery of horse in July	18 00	20 00
		Fee to hostler	1 00	
31	William H. Birch	Livery of horse for August		19 00
Aug. 4	W. H. Nalley	Printing, binding, &c., 2 Key to Letters Received	34 00	18 00
		2 sets of tags for	3 00	
		Printing, binding, &c., 2 Key to Letters Sent	32 00	
		Making 79 tags for	9 87	
		Making 13 tags for Executive Letter Book	1 63	
		Ruling and binding 2-6 quire Letter Books	18 00	
31	William Pierre	Services as laborer for August		38 60
Aug. 1	James S. Topham	1 horse-net		30 00
3	William H. Birch	Livery of brown horse 1 week		2 00
13	J. A. Jortian	1 double case	32 00	4 60
		Altering old case	10 00	
		1 small case	12 50	
		Putting up shelving	11 00	65 60

29	Joseph Gawler	Boards for letter press	3 00
		Desk	3 50
		106 file-boards	5 30
		Repairing chair	25
30	Landsey Muse	Washing towels for quarter	6 00
		Cash paid for scouring room	50
	William Pierre	Services as laborer for September	18 00
	William H. Birch	Livery of horse for September	2 00
		Fee to hostler for August and September	2 00
	Samuel Mickum	Cash paid postage on letters to chief clerk	6 00
	Blanchard & Mohun	6 reams waste paper	3 00
		1 ream note paper	2 40
		4 dozen lead pencils	50
		4 dozen ivory folders	1 50
		500 white envelopes	1 50
		2 dozen blotting boards	1 50
		5,000 official envelopes	20 80
		Printing ditto	15 00
		1 gold pen	1 00
		1 penknife	1 50
		2 gutta-percha rulers	1 50
		1 penknife	1 50
		1 penknife, extra	2 00
		1 penknife	1 50
		6 reams copying paper	6 00
		4 yards twilled cotton	63
		5 reams letter paper	17 50
		4 reams note paper	12 00
		2 penknives	3 00
		500 white envelopes, large	2 00
		Do..... small	1 50
		2 gross steel pens	2 00
		6 erasers, 50 cents; 1 pair scissors, 75 cents	1 25
		1 German Dictionary	3 50
		4 penknives	6 00

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1 60

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CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860.				
Oct. 19	Adams's Express Company ..	Freight on box	\$18 00	\$1 50
31	William H. Birch	Livery of horse in October	1 00	
		Fee to hostler		
Nov. 17	William Pierre	Services as laborer for October		19 00
	Charles K. Stollwagen	1 English 8-day clock	38 00	30 00
		Repairing and cleaning clock	4 50	
		Varnishing case and fitting 2 keys	2 00	
30	William H. Nalley	6 titles on Letters Received	1 25	44 50
		Binding 1 book of warrants	4 00	
		Binding 20 volumes, Regulations of Naval Academy	27 50	
		Binding 43 volumes letters	86 00	
		Ruling and binding 6 Record Books, 36 quires	54 00	
		Rebinding volume, Contracts	3 00	
		Making 1 portfolio	4 00	
		Ruling and binding 6 Letter Books, 6 quires each	54 00	
	William Pierre	Services as laborer for November		233 75
	William H. Birch	Livery of horse for November	18 00	30 00
		Fee to hostler	1 00	
Dec. 4	John W. Hogg	Hack hire on public business		19 00
5	John C. Rives	Congressional Globe		1 25
	Jackson, Brother & Co.	24 cakes soap		10 00
11	Samuel P. Wigg	2 days' services as extra clerk		1 20
13	John Alexander	Making 2 fire-boards		6 00
		Taking down 4 sets curtains	1 00	
		Taking up carpet and moving furniture	6 00	
		Taking up matting and cleaning floor	2 50	
		40 yards Goqua matting	18 00	

John Alexander	3 pieces binding	1 87
	Putting down 40 yards matting	4 00
	4 large window shades	13 00
	Putting down 2 carpets	3 00
	Moving furniture in 2 rooms	3 00
	Taking down and hanging 4 sets curtains	3 50
	155 yards matting	62 00
	4 pieces matting binding	2 50
	9 large buff window shades	29 50
	Putting down 155 yards matting	16 50
John Alexander	Cutting and sewing 91 yards carpeting	23 87
	Putting down 4 new carpets	10 00
	Putting down 3 old carpets	4 50
	Repairing 2 Venetian blinds	1 75
	Scraping and sizing walls of 10 rooms	37 50
	Scraping and sizing passage walls	21 75
	215 pieces of paper	107 50
	40 pieces of border paper	100 00
	131 pieces of paper	65 50
	21 pieces of border	15 76
John Alexander	Sizing and varnishing 152 pieces oak paper	56 62
	Hanging 397 pieces paper	99 25
	Hanging 61 pieces of border	30 50
	5 yards Brussels carpet	6 25
	Upholstering 6 chairs	4 50
	12 yards gimp	1 50
	3 yards cashmere	1 68
	Iron rod, rings, and making curtain	1 75
	Taking up carpet and moving furniture	2 50
	Hanging 4 curtains	3 00
John Alexander	Hanging 4 shades and new fixtures	2 50
	Taking up old matting	1 00
	3 pieces binding	1 87
	40 yards matting	18 00
	Putting down 40 yards matting	4 00
	Moving furniture	1 50
	5 yards Brussels carpet	6 25
	Upholstering 6 chairs	4 50
	12 yards gimp	1 50
	3 yards cashmere	1 68

CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860.				
Dec. 13	John Alexander—Continued.	6 yards Holland, \$2 25; 1 piece binding, 75 cents.....	\$3 00	
		Making chair cover.....	2 75	
		Putting down linen cover over hall carpet.....	3 50	\$59 30
14	F. Rosher.....	Putting cane seat in chair.....	.....	1 00
	Kidwell & Lawrence.....	6 ounces sponge.....	.....	1 50
18	John W. Bailey.....	Labor, washing windows.....	.....	1 00
22	Hose Brother & Co.....	2 yards cocoa matting.....	1 88	
		191 yards Brussels carpet.....	238 75	
		1½ pound carpet thread.....	1 87	
		2 8-9 square yards oil-cloth.....	3 61	246 11
27	F. D. Stuart.....	1 copy Wilkes's Theory of the Winds.....	.....	1 00
31	Lindsay Muse.....	Washing towels for quarter.....	.....	6 00
	William Pierre.....	Services as laborer in December.....	.....	30 00
	William H. Birch.....	Livery of horse for December.....	18 00	
		Fee to hostler.....	1 00	19 00
	Robert R. Aylmer.....	2 papers tacks.....	12	
		6 pounds sperm candles.....	3 60	3 72
	Samuel Redfern.....	1 broom.....	50	
		1 dusting brush.....	38	
		6 pounds sperm candles.....	3 60	
		6 whisk brooms.....	1 50	
	L. J. Middleton.....	1 peck ice, daily, for 78 days.....	9 75	5 98
		2 pecks ice, daily, for 52 days.....	18 00	
		3 pecks ice, daily, for 157 days.....	58 88	
		1½ peck ice, daily, for 26 days.....	4 87	86 50

Charles W. Welch.....	Hack hire on public business.....	3 00
Blanchard & Mohun	6 bottles copying ink.....	20 00
	2 reams large Manila paper	1 50
	1 dozen pencil-sharpeners	8 00
	2 penknives	1 00
	1 gross steel pens	3 00
	6 bottles mullage.....	3 00
	1 dozen blue and red pencils.....	2 50
	5 pounds sealingwax	1 50
	1 penknife	2 00
	2 gross pens.....	17 50
	5 reams letter paper.....	3 00
	4 dozen erasers	3 75
	4 dozen patent erasers.....	1 00
	1 dozen silk taste	1 00
	1 dozen silk ribbon	80
	1 portfolio slate.....	60
	1 ditto.....	60
	2 pounds cotton twine.....	1 00
	2 pounds gum-arabic	75
	4 yards twilled cotton.....	1 50
	1 Roget's Thesaurus.....	1 50
	1 penknife	1 00
	1 gross pens.....	1 00
	1 gold pen	1 00
	1 ream foolscap paper.....	13 00
	2 reams despatch cap paper	1 50
	3 sheets antiquarian paper	3 00
	Backing 2 sheets on linen	1 80
	6 yards tracing cloth	50
	6 Faber's drawing pencils.....	1 80
	6 bottles record ink	3 00
	6 bottles copying ink.....	25
	5 pounds black sand.....	3 25
	4 ream heavy foolscap, ruled to pattern	1 50
	6 bottles carmine ink	3 50
	1 gutta-percha pencil.....	3 60
	6 dozen lead pencils.....	3 50
	1 gutta-percha pencil.....	3 50

CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860. Dec. 31	Blanchard & Mohun—Cont'd.	5 quires large statement paper, ruled, &c.....	\$9 00	
		1 penknife.....	1 50	
		2 extra penknives.....	5 00	
		6 Department Directories.....	2 25	
				\$134 45
	William H Nalley.....	Printing, ruling, and binding Enlistment Returns.....	5 00	
		1 set tags for ditto.....	1 50	
				6 50
	Franck Taylor.....	French Navy List.....	87	
		Eliphant's Japan.....	2 75	
		Encyclopedia Britannica, 20 volumes.....	110 00	
				113 62
	McGregor & Co.	1 oak desk.....	30 00	
		1 oak chair.....	10 00	
				40 00
	McFarlane, Ferguson & Co.	Subscription to Southern Literary Messenger.....	7 00	
1861. Jan. 3	Charles W. Welsh.....	Hack hire on public business.....	1 50	
9	Charles W. Welsh.....	do.....do.....	1 50	
19	John Alexander.....	4 large white shades.....	13 00	
		Taking up and putting down hall carpet.....	5 00	
				18 00
22	John C. Rives.....	Copy of Congressional Globe.....	35 00	
	C. W. Boteler & Sons.....	1 desk.....	12 00	
		3 washstands.....	7 50	
		3 glasses.....	4 50	
		3 basins and ewers.....	1 87	
		3 soap boxes.....	6 00	
		3 slop jars.....	4 50	
		4 white spittoons, \$4 ; 3 tumblers, 50 cents.....		63 87

25	William Smith	Hack hire on public business	1 00
26	George Bell	do	2 00
29	Joseph L. Savage	2 pairs iron dogs	6 25
		3 pairs shovels and tongs	5 25
		3 fenders	20 00
	William S. Mitchell & Co.	123 yards 6-4 cocoa matting	138 37
		41 yards 6-4 ditto	38 64
	William Pierre	Services as laborer in January	75
	Joseph Gawler	Repairing 3 chairs	5 50
		Repairing and covering chairs with leather	2 00
		Making divisions in chairs	1 75
		Furnishing cord and putting up blind	18 00
	William H. Birch	Livery of horse for January	1 00
		Fee to hostler	19 00
	Samuel Mickum	Postage on letters to chief clerk	1 65
1	William M. Browne	1 copy Daily Constitution	3 50
2	J. W. Abell	Hack hire on public business	1 00
8	Edwin Green	1 cane seat arm-chair	3 00
		1 dozen cane seat chairs	12 00
	Taylor & Maury	Volume 8, Bancroft's United States	15 00
11		18 Congressional Directories	2 25
			6 75
	Adams's Express Company	Freight on 1 package	9 00
14	Charles W. Welsh	Hack hire on public business	75
15	George W. Bowman	Subscription to Daily Constitution	1 50
16	William H. Nalley	Ruling, binding, &c., Executive Letter Book	1 33
		Tags for ditto	9 00
		Binding 1 volume National Intelligence	1 50
			3 00
21	John C. Rives	Daily Globe	13 50
26	Augustus Dorsey	Services in selecting and purchasing horse	3 00
28	William H. Birch	1 day's horse hire for department cartall	10 00
		Livery of bay horse from January 25 to February 24	2 50
		Livery of gray horse 26 days	18 00
			15 60

Feb.

CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1851. Feb. 28	Wm. H. Birch—Continued	Cash paid for medicine for gray horse..... Hostler's fee	\$2 50 1 00	
March 6	William Pierre.....	Services as laborer for February.....		\$39 60
7	G. H. Heap.....	Hack hire on public business.....		30 00
13	J. Baumgarten.....	1 departmental seal and press.....		1 50
	William Wormley.....	Cash paid Adams's Express Company for freight.....		18 00
	Samuel Mickum.....	Cash paid postage of letters to chief clerk.....		75
21	Adams's Express Company.....	Freight on package.....		1 40
31	William Pierre.....	Services as laborer for March.....		75
	Lindsay Muse.....	Washing towels for quarter.....	6 00	30 00
		Making 2 dozen towels.....	1 50	
	Joseph Gawler.....	Making case for papers.....	30 00	7 50
	Blanchard & Mohn.....	1,500 heavy pamphlet envelopes.....	40	25 00
		2 quires pink blotting paper.....	2 25	
		3 dozen blotting boards.....	3 00	
		12 dozen red tape.....	6 00	
		4 penknives.....	2 50	
		1 extra large gold pen and case.....	17 50	
		5 reams letter paper.....	1 50	
		500 white letter envelopes.....	24 00	
		4 reams letter paper.....	3 00	
		1 dozen red and blue pencils.....	3 00	
		1 gross steel pens.....	1 00	
		4 dozen ivory folders.....	50	
		1 penknife.....	1 50	
		6 pieces large rubber.....	60	
		1 Bible.....	63	
		3 glass inkstands.....	1 50	
		6 reams waste paper.....	3 90	

		2 porcelain inkstand.....	1 50			200 58
		6 pounds hemp twine.....	1 50			1 50
		1 gold pen and case.....	1 00			1 00
		3 gross steel pens.....	3 00			1 00
		1 pen-holder.....	5			1 00
		2 reams despatch cap.....	13 00			30 00
		2 gross pens.....	2 00			15 00
		6 reams copying paper.....	6 00			16 00
		1 gross pens.....	1 00			
		1 large gold pen, pencil, and case.....	20 00			
		2 extra penknives.....	6 00			
		1 penknife.....	1 50			
		500 large envelopes.....	2 00			
		1 dozen red and blue pencils.....	3 00			
		5,250 white official envelopes.....	21 00			
		Printing ditto.....	15 00			
		4 pounds gum-arabic.....	2 00			
		1 gross pens, \$1 ; 6 pen-holders, 25 cents.....	1 25			
		Removing furniture.....				
		Cartage of furniture.....				
		Hack hire on public business.....				
		..... do..... do..... do.....				
		Printing notices.....				
		Services as laborer for April.....				
		Services as laborer for half of April.....				
		Livery of horse for April.....				
		Paper for 2 rooms.....	20 00			
		Papering ditto.....	10 00			
		6 pieces gilt border.....	10 50			
		Freight on package.....				
		Services as laborer for May.....				
		..... do..... do..... do.....				
		Tobacco for preservation of carpets.....	5 00			
		Washing hall floor cloth.....	5 25			
		Cleaning carpets.....	2 00			
		Scrubbing oil-cloth in hall.....				
April	15	John Thomas.....				
		John Bell.....				
	30	Thomas Baltimore.....				
		James Quinn.....				
		R. A. Waters.....				
		William Pierre.....				
		Overton Bond.....				
May	6	Robert Earl & Son.....				
	13	William Hounschild.....				
		Adams's Express Company.....				
	25	William Pierre.....				
	31	Overton Bond.....				
		F. W. Brandenburg.....				
June	8	Preston Jackson.....				

CONTINGENT EXPENSES OF

Date.	To whom paid.	For what paid.	Amount.	Total.
1861. June 29	Lindsay Muse	Washing towels..... Washing sofa and chair covers.....	\$6 00 1 00	\$7 00
30	Robert Earl & Son..... William Hounschild	Livery of horse and carriage		32 00
		Taking up 3 carpets..... Putting down hall cloth..... Taking down 4 window curtains..... 2 Venetian blinds..... Trimming front of department in mourning.....	4 00 2 00 2 50 24 00 10 80	
	Joseph Gawler	Putting blocks under chairs..... Varnishing and covering table..... Making 4 boxes	75 2 00 6 00	43 30
		Putting block under clock	1 00	
		Making 1 set of drawers	4 00	
	Overton Bond.....	Washing towels for quarter..... Hemming 1 dozen towels	1 00 75	13 75
	Hose Brother & Co.....	2 dozen fringed towels..... 6 yards linen crash..... 5 pieces twilled tape	7 50 75 50	1 75
		1 dozen huckaback towels	3 00	
		1 piece tape	5	
	Blanchard & Mohun	1 gross steel pens..... 1 ream ruled note paper..... 1 package pens..... 1 penknife	1 00 3 00 1 25 1 50	11 80
		5 reams letter paper..... 2 boxes pens.....	17 50 1 00	

5 boxes Gillott's pens.....	1 25
6 pieces India-rubber.....	1 60
1 penknife.....	1 50
12 pieces silk taste.....	1 00
12 pen-holders.....	50
500 white letter envelopes.....	1 50
Printing ditto.....	1 50
5 reams note paper.....	15 00
1 patent inkstand.....	1 50
2 blank books.....	7 00
1 ditto.....	2 00
Making projecting alphabet.....	2 50
2 gross medallion pens.....	2 00
1 gross fountain pens.....	1 00
12 dozen red tape.....	3 00
500 large white envelopes.....	2 00
500 small ditto.....	1 50
1 ream note paper.....	3 00
1,000 extra large envelopes, per order.....	25 00
Printing ditto.....	3 00
5 reams letter paper.....	17 50
4 penknives.....	6 00
2 extra penknives.....	4 00
6 dozen lead pencils.....	3 50
1 box quill pens.....	63
1 large blank book.....	1 75
2 reams letter paper.....	7 00
Ruling ditto to pattern.....	1 50
1 ream letter paper.....	3 50
1 glass inkstand.....	75
3 dozen pen-holders.....	1 50
1 gross steel pens.....	1 00
1 box Gillott's pens.....	75
1 gross elastic pens.....	1 00
1 blank record book.....	4 00
1 gross spear-pointed pens.....	1 00
1,500 white official envelopes.....	6 00
Printing ditto.....	4 50
1 gross pens.....	1 00

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1861. June 30	Blanchard & Mohun—Cont'd.	500 official envelopes..... Printing ditto..... 1 glass inkstand..... 1 bottle Arnold's fluid..... 1 dozen carmine and blue pencils..... 6 reams waste paper..... 6 reams copying paper..... 1 bottle blue ink..... 1 large barrel gold pen..... 200 large official envelopes.....	\$20 00 15 00 1 00 50 3 00 3 25 6 00 25 3 50 80	\$225 38
	Franck Taylor.....	Almanach de Gotha..... British Almanac and Companion..... British Army List..... Royal Calendar..... Hart's Army List..... 4 American Almanacs, \$4; binding ditto, \$2..... Encyclopedia Britannica, volume 21..... 2 British Navy Lists..... Annuaire de Marine.....	1 75 1 75 75 2 13 7 00 6 00 5 50 2 00 87	27 75
	Samuel Redfern.....	2 large brooms, at 50 cents, \$1; 1 M tacks, 6 cents..... 6 pounds sperin candles..... Soap..... Soda.....	1 06 3 60 20 25	
	William Pierre..... Overton Bond.....	Services as laborer for June..... .....do.....do.....	5 11 30 00 30 00	5 11 30 00 30 00
				3,902 77

1860.		<i>Bureau of Yards and Docks.</i>			
July	13	C. Wendell.....	Binding, &c., 3 volumes Estimates, 1860-'61.....	9 00	21 37
			Making 11 tags for ditto.....	2 75	3 00
			Binding Volume Laws United States.....	87	
			Binding Contracts and Bonds.....	5 00	
			Making division tags for ditto.....	2 25	
			Binding 1 volume President's Message.....	75	
			Binding 1 volume Naval Investigation.....	75	
Sept.	30	E. L. Savoy.....	Washing towels for quarter.....	50	
		Blanchard & Mohun.....	1 box barrel pens.....	50	
			1 pound gum-arabic.....	4 00	
			1,000 buff envelopes.....	50	
			1 pound gum-arabic.....	20 00	
			5 reams cap paper.....	7 00	
			2 reams letter paper.....	3 00	
			2 penknives.....	2 40	
			4 dozen lead pencils.....	3 00	
			12 dozen red tape.....	50	
			1 bottle mucilage and brush.....	1 50	
			1 penknife.....	1-50	
			1 gross matches.....	2 25	
			750 letter envelopes.....	1 00	
			1 gross Perry's pens.....	1 00	
			1 gold pen and case.....	1 00	
Oct.	22	John C. Rives.....	Ruling 460 copies statements of contracts.....	1 15	54 65
			Ruling 920 copies statements of expenditures.....	2 30	
			Ruling 460 copies exhibits of money requisitions.....	1 15	
			Ruling 600 copies contracts, miscellaneous.....	3 00	
			Ruling 400 copies special contracts.....	2 00	
Nov.	20	J. B. Lippincott & Co.....	1 copy Metcalf on Caloric.....	9 60	
	30	William H. Nalley.....	Binding 2 volumes Navy Reports.....	5 00	
			Binding 1 volume Patent Office Report.....	1 50	
			Ruling and binding 6-quire Bill Book.....	75	
			Binding 1 volume Investigation of Navy Yards.....	4 60	
			Making 269 miscellaneous titles.....	75	
				32 37	

CONTINGENT EXPENSES OF

Date.	To whom paid.	For what paid.	Amount.	Total.
1860.				
Nov. 30	Wm. H. Nalley—Continued.	Making 13 miscellaneous titles.....	\$1 62	\$69 74
		Ruling and binding 2 6-quire Record Books.....	18 00	5 00
		Making 10 tags for ditto.....	1 25	5 00
		Binding 1 volume Plans of Navy Yards.....	3 00	5 62
		Ruling and binding 2 4-quire cap Minutes.....	6 00	
Dec.	Chauncey Warriner.....	Cleaning and repairing clock.....		
11	William G. Bitner.....	Hanging new bell.....		
13	J. H. A. Schureman.....	Labor in moving office furniture.....		
15	J. B. Turton.....	4 tumbler locks and fitting.....	2 25	
		Wood box and painting.....	5 75	
		3 racks, with 17 brass books.....	4 62	
		Making cleats, and removing clock, &c.....	2 00	
		Repairing and moving bookcase.....	7 50	
		Putting up cleats and making shelf.....	1 75	
		Nailing list around doors.....	38	
		Stripping and calking windows.....	7 50	
		Shelves for books.....	2 62	
		48 covered strips to windows.....	2 38	
31	Joseph Gawler.....	Re-stuffing and covering chair.....	6 25	36 75
		Making seat for chair.....	3 75	
		Covering 9 tables with canvas.....	22 00	
		Canning chair seat.....	1 00	
		Making chair cushion.....	1 00	
		Making fire-screen.....	5 00	
		Divisions in bookcase.....	75	
		Repairing and covering chairs, &c.....	6 00	
		Making 2 wood boxes.....	7 00	
	E. L. Savoy.....	Washing towels for quarter.....		52 75
				3 00

1861. Jan. 19 21 29	Blanchard & Mohun	1 bottle maulage	75	
		1 bottle ink	30	
		1 gross steel pens	1 50	
		100 quills	1 50	
		2 boxes barrel pens	1 00	
		4 patent erasers	2 00	
		1 dozen steel graters	1 00	
		1 pocket rule	1 00	
		2 boxes Perry's pens	1 00	
		1 dozen soap	1 38	
		12 boxes Gillott's pens	3 00	
		1 ream copying paper	1 00	
		2 quarts black sand	10	
		1 ream note paper	3 00	
		2 bottles gum cement	75	
		1 chamolis skin	75	
Feb. 11 16	John Alexander William H. Nalley	New bottom to chair		20 53
		3 copies Congressional Directories		75
		2 whisk brushes		1 05
		1 coal hod	25	
		1 broom	1 25	
		2 hearth brushes	31	
		2 fenders	1 00	
		1 water cooler	9 38	
		1 pair hooks	4 50	
		1 fender	1 00	
			4 54	
		2 window shades		22 23
		Binding Schedules of Materials		5 50
		Do.....do.....(interleaved)	1 25	
		Binding National Intelligencer	2 50	
			6 00	
March 31	E. L. Savoy Blanchard & Mohun	Washing towels for quarter		9 75
		1 ream note paper	3 00	
		1 dozen silk taste	1 00	
		3 pounds hemp twine	90	
		1 pair shears	8	
		2 pairs scissors	17	

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1861. March 31	Blanchard & Mohun—Cont'd.	1 gross pens..... 1 dozen pen-holders..... 2 wool skins..... 1 ream envelope paper..... 41 yards sheeting..... 500 official envelopes..... 500 letter envelopes..... 1 gross Perry's pens..... 4 gross barrel pens..... 1 gross pens..... 3 penknives..... 500 letter envelopes..... 500 official envelopes..... 500 letter envelopes..... 4 dozen carmine ink.....	\$1 00 50 6 00 1 00 6 97 2 00 1 50 1 00 50 1 00 4 50 1 50 2 00 1 50 1 50	\$37 62
May 1	Pettibone & Boteler.....	Binding Secretary's Report..... Binding Yards and Docks Report..... Binding Letter Books..... Binding Contracts and Bonds..... 9 morocco labels..... Binding 1 volume Navy Reports.....	1 00 1 00 5 00 5 00 2 25 75	
June 30	E. L. Savoy..... John D. Defrees.....	Washing towels for quarter..... Ruling 300 special contracts..... Binding 3 volumes Estimates..... 11 tags for same..... Ruling 500 miscellaneous contracts..... Ruling 400 requisitions.....	1 50 9 00 2 75 2 50 1 15	15 00 3 00
	Blanchard & Mohun.....	1 gold pen and handle.....	1 50	14 87

1 ream note paper.....	3 00	
1 box barrel pens.....	50	
1 pound sealing wax.....	50	
1 ream note paper.....	3 00	
1 gold pen and holder.....	1 00	
2 propelling pencils.....	75	
1 ream letter paper.....	3 50	
1 quire large statement paper, ruled.....	2 00	
3 porcupine pen-holders.....	75	
1,000 official envelopes.....	4 00	
500 letter envelopes.....	1 50	
1 bucket.....	1 25	
1 ream note paper.....	3 00	
2 dozen Faber's pencils.....	1 30	
1 ream envelope paper.....	1 00	
1 ream note paper.....	3 00	
500 white envelopes.....	1 50	
1 dozen sable pencils.....	1 00	
1 dozen Gillott's mapping pens.....	50	
1 ream letter paper.....	3 50	
1 ream foolscap paper.....	1 00	
2 boxes barrel pens.....	1 00	
4 boxes pens.....	1 00	
500 letter envelopes.....	1 50	
1 ream note paper.....	3 00	
	44 95	
Franck Taylor	75	
1 British Navy List	1 00	
1 American Almanac.....	50	
Binding ditto.....		
		2 25
		451 48

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860.		<i>Bureau of Ordnance and Hydrography.</i>		
July 10	John Siebert	Taking up and shaking carpets		\$2 50
Sept. 30	Henry Neal	Washing towels for quarter		3 00
	Blanchard & Mohun	1 ream letter paper	\$3 50	
		2 reams waste paper	1 20	
		1 ream note paper	3 00	
		500 letter envelopes	2 00	
		1 dozen cakes soap	1 50	
		1 ream note paper	3 00	
		2 dozen lead pencils	1 20	
		4 dozen silk braid	50	
		1 glass inkstand	88	
		1 folder	8	
		1 penknife	1 50	
		2 reams manilla paper	8 00	
		1 ream despatch cap	6 50	
		14 ream note paper	4 50	
		2 quires blotting paper	50	
		500 letter envelopes	1 50	
		1 ream letter paper	3 50	
		1 dozen patent India-rubber	1 00	
		1 gold pen	1 00	
		1 extra large gold pen	3 50	
		1 penknife	1 50	
		2 quires blotting paper	50	
		150 envelopes	45	
		Camphor	25	
		Mending shears	25	
		1 bucket	75	
Nov. 5	L. F. Perry & Co.	102 yards carpeting	102 00	52 06

Nov.	7 30	Edwin Green..... William H. Nalley.....	8 yards oil-cloth.....	10 00
			Making and putting down carpets.....	15 00
			Putting down oil-cloth.....	50
			3 papers tacks.....	37
			Thread.....	1 35
Dec.	12 15	J. P. McCorkle..... James Brown..... John B. Turtton.....	1 office desk.....	129 32
			Binding volume Estimates.....	38 00
			Making 11 tags.....	1 50
			Binding volume United Service Magazine.....	2 75
			1 title.....	75
			1 dozen Guard Books.....	25
			1 dozen ditto for Naval Academy.....	15 00
			Cash paid for freight.....	15 00
			Moving office furniture.....	35 25
			142 file-boards.....	1 50
Dec.	31	Joseph Gawler..... Blanchard & Mohun.....	3 large wood boxes.....	1 00
			Painting ditto and 1 table.....	7 10
			Repairing bookcase.....	17 00
			Repairing and re-covering fire-screen.....	3 75
			Varnishing bookcase.....	1 00
			Planing drawing boards.....	28 85
			1 penknife.....	7 00
			150 letter envelopes.....	2 25
			1 paper basket.....	4 00
			14 dozen pen-holders.....	75
Nov.	7 30	Edwin Green..... William H. Nalley.....	1 pen-rack.....	38
			1 ream envelope paper.....	1 00
			1 dozen Faber's drawing pencils.....	1 00
			1 dozen thumb tacks.....	1 00
			3 reams despatch cap.....	19 50
			1 dozen lead pencils.....	60
			600 official envelopes.....	2 40
			600 letter envelopes.....	1 80
			1 box ready-made pens.....	50
			24 yards tracing linen.....	7 20

CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860. Dec. 31	Blanchard & Mohun—Cont'd.	1 blank book.....	\$1 00	
		1 glass inkstand.....	75	
		1 letter balance.....	1 50	
		2 yards cotton.....	37	
		1 pound gun-arabic.....	50	
		3 pounds hemp twine.....	90	
		1 ream copying paper.....	1 00	
				\$44 85
	William H. Nalley.....	Binding and binding 1 6-quire Reports.....	9 00	
		1 memorandum book.....	1 50	
				10 50
1861. Jan. 21	Henry Neal.....	Washing towels for quarter.....		3 00
	L. F. Perry & Co.....	56 yards Brussels carpet.....	49 00	
		1 door mat.....	1 25	
		making 56 yards carpet.....	5 60	
		Putting down ditto.....	3 00	
		Thread.....	50	
				69 35
22 Feb. 1	C. W. Boteler & Sons.....	1 revolving chair.....		11 00
	William Hounschild.....	Repairing office chair.....		2 50
	William M. Browne.....	Copy of Daily Constitution.....		3 50
11 12	Taylor & Maury.....	2 Congressional Directories.....		75
	S. Simmons.....	16 omnibus tickets, public service.....	80	
		Freight on model.....	38	
				1 18
16	William H. Nalley.....	Binding and binding 1 6-quire Record Book.....	9 00	
		11 tags for ditto.....	1 38	
				10 38
March 31	Henry Neal.....	Washing towels for quarter.....		3 00
	Blanchard & Mohun.....	Congressional Directory.....	38	

May 8	Pettibone & Boteler.....	1 penknife.....	1 50	28 24
June 30	Henry Neal.....	1 inkstand.....	50	1 25
		1 ream note paper.....	3 00	3 00
		1 ream letter paper.....	3 50	
		1 gross steel pens.....	1 00	
		1 ream note paper.....	3 00	
		1 dozen soap.....	1 50	
		2 quarts ink.....	60	
		1 ream envelope paper.....	1 00	
		500 official envelopes.....	2 00	
		600 letter envelopes.....	1 80	
		1 penknife.....	1 50	
		2 erasers.....	16	
		Buckets, &c.....	4 50	
		1 ream note paper.....	1 50	
		100 envelopes.....	30	
		Bottle mudlage and brush.....	50	
		Binding 2 volumes Secretary's Report.....		
		Washing towels for quarter.....		
				480 98
1860.				
July 13	C. Wendell.....	1 Guard Book for advertisements.....	3 00	
		Making 6 morocco labels for cases.....	1 50	
		Binding 1 volume Report of Commissioners.....	1 25	
		Washing towels for quarter.....		
		2 dozen lead pencils.....	1 20	
		1 gross steel pens.....	50	
		2 reams letter paper.....	7 00	
		1 ream copying paper.....	1 00	
		6 quarts writing ink.....	1 80	
		6 quarts copying ink.....	3 00	
		11 penknives.....	17 50	
Sept. 30	A. Nettleton.....			5 75
	Blanchard & Mohun.....			3 00

Bureau of Construction, Equipment, and Repair.

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860. Sept. 30	Blanchard & Mohun—Cont'd.	100 quills..... 4 ream despatch cap..... 10 dozen blotting boards..... 3 dozen Faber's pencils..... 1 box eyelets..... 500 letter envelopes..... 500 note envelopes..... 12 dozen red tape..... 1 pound gum-arabic..... 1 ream envelope paper..... 1 punch..... 1 mallet..... 1 hammer..... 1 extra penknife..... 1 box pens..... 1 eraser..... 3 ivory folders..... 1 jar mucilage..... 1 ream note paper..... 1 gross pens..... 2 boxes pens.....	\$0 50 3 25 7 50 1 80 1 50 1 50 3 00 1 00 50 1 00 25 38 75 2 00 25 8 25 63 3 00 1 00 50	
Oct. 2	John B. Turton.....	Material and covering table..... Repairing 1 table..... Furnishing and putting on 2 locks..... Making box for books..... 1 cherry hand-board..... 1 box for books..... Altering shelves..... Making 102 file-boards..... 59 label boards.....	4 62 88 1 62 1 50 75 1 25 1 75 10 02 2 16	\$62 14

Dec.	23	John C. Rives.....	1 packing box.....	1 75	30 68
			3 ditto.....	4 38	
			Ruling 460 circular letters.....	1 15	
			Ruling 460 monthly statements.....	1 15	
			Ruling 460 exhibits.....	1 15	
			Ruling 460 blank bills.....	1 15	
			Cash paid 4 laborers for removing furniture.....	4 60	
	4	John Simms.....	Putting seats in 3 chairs.....	6 87	
	11	F. Rosher.....	Repairing water pitcher.....	2 75	
	12	James Kelly.....	Freight on box.....	75	
	13	S. Archbold.....	Making 1 wood hod.....	4 00	
	15	J. B. Turton.....	Cleaning and rating chronometer.....	2 62	
	20	C. R. Stellwagen.....	4 7-9 square yards oil-cloth.....	4 50	
	22	Hose Brother & Co.....	Washing towels for quarter.....	5 98	
	31	A. Nettleton.....	1 peck ice, daily, from January 1 to June 30.....	3 00	
		L. J. Middleton.....	1 peck ice, daily, from July 1 to September 30.....	9 75	
			1 peck ice, daily, from October 1 to December 31.....	4 93	
		Blanchard & Mohnn.....	1,000 white official envelopes.....	4 00	
			500 letter envelopes.....	1 50	
			1 ream letter paper.....	3 50	
			12 boxes barrel pens.....	3 00	
			12 papers black sand.....	75	
			1 pound India-rubber.....	25	
			1 pair shears.....	8	
			1 ream copying paper.....	1 00	
			1 gross steel pens.....	1 50	
			3 dozen lead pencils.....	1 80	
			1 spittoon.....	50	
			2 reams note paper.....	6 00	
			100 quills.....	50	
			1 brush.....	25	
			1 jar.....	25	
			1 sponge.....	20	
			1 ream note paper.....	3 00	
			1 ream letter paper.....	3 50	
			1 ream foolscap.....	50	
					24 43

CONTINGENT EXPENSES OF

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860. Dec. 31	Blanchard & Mohun—Cont'd.	1 ream foolscap..... 2 reams letter paper..... 1,000 letter envelopes..... 1 ream envelope paper..... 1 ream copying paper..... 1 pound gum-arabic..... 3 dozen silk braid..... 3 dozen lead pencils..... 3 balls twine..... 1 dozen red and blue pencils..... 1 dozen pen-holders..... 1 glass inkstand..... 1 memorandum book..... 1 gross pens..... 1 coal-scuttle.....	\$1 00 7 00 3 00 1 00 1 00 50 3 00 1 80 1 12 3 00 50 38 1 00 1 50	\$57 88
	William H. Nalley.....	Contract Book, Russia ends, &c..... Furnishing and ruling 9 quires paper for ditto.....	10 00 10 00	20 00
1861. Jan. 23	John C. Rives.....	Ruling 460 copies Charter-Party.....	1 15	1 15
Feb. 11	William M. Browne.....	1 copy Daily Constitution.....	3 50	3 50
March 31	Taylor & Maury.....	4 copies Congressional Directory.....	1 50	1 50
	A. Nettleton.....	Washing towels for quarter..... 1 Departmental Directory.....	35	3 00
	Blanchard & Mohun.....	6 quarts black ink..... 4 ream copying paper..... 1 pound wax..... 1 broom..... 2 reams letter paper..... 1 ream note paper..... 2 gross steel pens.....	1 80 60 90 40 10 50 3 00 2 00	

		1 ream large wrapping paper.....	8 00
		1 gross medallion pens.....	1 00
		1,600 official envelopes.....	4 00
		500 letter envelopes.....	1 50
		3 dozen soap.....	3 00
		1 roan despatch cap.....	6 50
		1 penknife.....	1 50
		24 swan quills.....	12
		3 dozen lead pencils.....	1 80
		1 dozen red and blue pencils.....	2 50
		1 gross pens.....	1 00
		6 dozen tape.....	1 50
		1 ream copying paper.....	1 00
		1 ivory folder.....	8
		1 pound india-rubber.....	50
		1 pound gum-arabic.....	50
		1 gross medallion pens.....	1 00
		2 drawing pencils.....	20
		1 eraser.....	8
		1 gross medallion pens.....	1 00
		1 water cooler.....	6 00
		500 letter envelopes.....	1 50
		1 eraser.....	8
April 19	John Watt.....	1 bucket.....	2 25
		1 broom.....	38
		2 papers tacks.....	20
May 28	George W. Bowman.....	Copy of Daily Constitution.....	2 83
June 30	John Simms.....	Washing towels for quarter.....	1 33
	Frank Taylor.....	2 American Almanacs.....	3 00
			3 00
			321 67
			63 41

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860. July 13	C. Wendell	<i>Bureau of Provisions and Clothing.</i> Binding Secretary's Report..... Binding 8 volumes Letters..... Making 40 division tags..... Making 2 sets alphabetical tags.....	\$0 75 16 00 10 00 4 00	\$30 75
Sept. 30	Jonathan Pierre..... Blanchard & Mohun	Washing towels for quarter..... 4 penknives..... 1 gross steel pens..... 1 ream envelope paper..... 1 penknife..... 2 reams letter paper..... 1 penknife..... 1 bottle red ink..... 2 pieces India-rubber..... 1 sheet Bristol board..... 100 quills..... 1 pound gum-arabic..... 1 ream letter paper..... 500 letter paper..... 2 reams letter paper..... 1 gross steel pens..... 1 box barrel pens..... 1 ream note paper..... 5 packs envelopes..... 5 sticks wax..... 2 dozen lead pencils..... 1 dozen pen-holders..... 1 paper folder..... 1,000 official envelopes..... Printing ditto.....	..... 6 00 1 00 1 00 1 50 7 00 1 50 50 50 25 50 50 1 75 1 50 7 00 1 00 25 1 50 88 25 1 00 75 8 4 00 3 00	3 00

Oct.	19	John C. Rives.....	1 ream letter paper.....	3 50
			6 dozen red tape.....	1 50
			1 ream letter paper.....	3 50
			1 spool red tape.....	1 50
			1 pair shears.....	8
			1 ream note paper.....	3 00
56 49				
Nov.	31	Ignatius Lucas..... William H. Nalley..... Joseph Gawler.....	Ruling 900 reservation bills.....	2 25
			Ruling 3,000 bills of lading.....	7 50
			Ruling 2,760 Invoices.....	6 90
			Ruling 500 returns of provisions, &c.....	1 25
Nov.	1		1 pine table.....	2 00
			Binding volume of Contracts.....	1 00
			Repairing chairs.....	75
			Re-stuffing cushion.....	1 00
			Repairing 3 locks.....	75
			Re-stuffing cushion.....	75
			Repairing desk.....	5 00
			Covering desk and table with cloth.....	1 75
			Making 7 boards.....	
Dec.	26 31	J. Hackett..... Jonathan Pierre..... Samuel Redfern.....	1 standing desk.....	12 25
			Washing towels for quarter.....	8 00
			1 dozen cakes soap.....	3 00
			1 broom.....	1 00
			4 whisk brooms.....	50
			1 basket.....	75
			Hearth broom.....	13
			2 papers tacks.....	25
			Cotton.....	10
			3 hearth brushes.....	1 87
			Duster.....	62
			1 mouse trap.....	25
			1 bucket.....	50
			1 bucket.....	56
			1 basin.....	37
			1 cake soap, 8 cents; 1 broom, 25 cents.....	33

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860. Dec. 31	Blanchard & Mohun	2 boxes pens..... 1 package letter paper..... 15 card boards..... 7½ quires cap paper..... 1 ream envelope paper..... 6 quarta ink..... 500 envelopes..... 1 corkscrew..... 2 reams letter paper..... 6 bottles copying ink..... 4 ream despatch cap..... 1 ream copying paper..... 2 spools red tape..... 1 dozen silk taste..... 1 box pens..... 1,000 official envelopes..... Printing 500 envelopes..... 1 gross pens..... 2 reams letter paper..... 1 gross steel pens..... 500 white envelope..... 1 ream note paper..... 500 envelopes..... 1 dozen pencils..... 4 packages note paper..... 300 envelopes..... 1 ream note paper.....	\$0 50 2 00 2 25 3 00 1 00 1 80 1 50 40 7 00 3 00 3 25 1 00 2 50 1 00 25 3 00 1 50 7 00 1 00 1 50 3 00 1 50 60 5 00 1 50 3 50	
	William H. Nalley.....	Binding 2 volumes Requisitions..... Binding Naval Storekeepers' Letters..... Making 7 tags.....	4 00 2 00 1 75	\$60 55

1861.		Binding volume full of leading.....	2 00
Jan	C. Bohn	Binding Webster's Dictionary.....	88
21	Walter Godey.....	3 Congressional Directories.....	
22	Joseph Gawler.....	Ice for year 1860.....	
31		Varialing case and table.....	2 00
		Putting up shelf.....	1 00
		Putting casters on chair.....	50
		Making 4 blocks.....	50
		Repairing chair and cushion.....	1 25
Feb.	William M. Browne.....	Daily Constitution.....	
1	Murray & Semmes.....	Subscription to New York Shipping and Commercial List.....	
7	Taylor & Maury.....	4 Congressional Directories.....	7 00
11	William H. Nalley.....	Binding 2 volumes Constitution.....	1 50
16	George W. Bowman.....	Subscription to Constitution.....	6 00
	Jonathan Pierre.....	Washing towels for quarter.....	1 33
March	Joseph Gawler.....	2 window shades.....	3 00
31	Blanchard & Mohun	2 reams letter paper.....	3 00
		1 gutta-percha pencil.....	7 00
		1 pound gum-arabic.....	75
		4 ream record paper.....	50
		6 dozen red tape.....	2 00
		2 spoons red tape.....	1 50
		1 pound sealingwax.....	1 50
		2 balls twine.....	50
		6 pen-holders.....	75
		4 ream manilla paper.....	37
		4 ream ditto, (small).....	4 00
		1 ream envelope paper.....	2 00
		1 Department Directory.....	1 00
		1 gold fountain pen.....	35
		1 quire French letter paper.....	2 50
		1 ivory paper folder.....	25
		2 dozen Faber's pencils.....	8
		1 penknife.....	2 00
		500 letter envelopes.....	1 50
		2 reams letter paper.....	1 50
		1,000 official envelopes.....	7 00
			4 00

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1861. March 31	Blanchard & Mohun—Cont'd.	Printing 1,000 envelopes	\$3 00	
		4 ream note paper	1 50	
		200 envelopes	60	
		4 ream despatch cap paper	3 25	
		1 gross pens	1 00	
		1 ivory folder	8	
		1 box pens, and 1 gross ditto	1 25	
		1 dozen pen-holders	50	
				\$53 23
May 17	Franck Taylor	American Almanac, bound	1 00	1 50
June 4	Joseph Gawler	Re-stuffing chair	7 00	
		Making case	8 00	
		Making writing-fall for table	2 00	
		12 boards	75	
		Fitting keys to locks		
				18 75
30	Jonathan Pierre	Washing towels for quarter	7 00	3 00
	Blanchard & Mohun	2 reams letter paper	15	
		1 box wafers	3 00	
		1 ream note paper	1 00	
		1 dozen drawing pencils	1 50	
		4 ream note paper	1 50	
		1 penknife	1 00	
		1 box pens	2 00	
		2 reams copying paper	1 00	
		1 gross steel pens	1 00	
		1 gross pens	1 50	
		1 penknife	2 00	
		2 dozen Faber's pencils	3 00	
		1 ream note paper	25	
		1 bottle carmine ink		

2 reams letter paper.....	7 00	
1,000 letter envelopes.....	8 00	
Printing 500 envelopes.....	1 50	
1 letter file.....	1 00	
1 eraser.....	8	
1 pound gum-arabic.....	50	
1 ream letter paper.....	3 50	
2 sticks wax.....	20	
1 inkstand.....	75	
50 letter envelopes.....	15	
3 spools red tape.....	3 75	
1 ream foolscap.....	50	
2 bottles carmine ink.....	50	
1,000 official envelopes.....	4 00	
Printing ditto.....	8 00	
1 waste-paper basket.....	1 00	
1 ream note paper.....	1 50	
1 penknife.....	1 50	
1 ream mapping paper.....	3 50	
1 pound sealingwax.....	50	
1 penknife.....	1 50	
3 penknives.....	4 50	
1 corkscrew.....	25	
1 dozen cakes soap.....	1 00	69 58
Shovel and tongs.....	3 00	
1 pound sperm candles.....	62	
1 tumbler.....	25	
1 quart turpentine.....	25	
Samuel Redfern		5 77
		424 76

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
		<i>Bureau of Medicine and Surgery.</i>		
1860			\$2 00	
July 13	C. Wendell	Binding 1 volume Letters.....	2 00	\$4 00
		Making 1 Guard Book.....		
31	G. M. Wight	1 walnut enclosed stand.....	12 00	
		1 ewer and basin.....	1 75	
		1 water bucket.....	1 50	
		1 soap tray.....	50	15 75
Aug. 4	J. A. Jordan	Putting shelf in bookcase.....	37	
		Putting 6 shelves in bookcase.....	1 50	
		Inside Venetian blinds, painting, fixtures, &c.....	15 00	16 87
Sept. 30	Marsh B. Clark, Blanchard & Mohun	Washing towels for quarter.....	75	3 00
		12 papers black sand.....	1 50	
		500 letter envelopes.....	37	
		1 memorandum book.....	10	
		1 ream common letter paper.....	2	
		1 water stand.....	1	
		1 pound 2d quality sealing wax.....	1 50	
		1 penknife.....	50	
		1 pound gum-arabic.....	1	
		1 dozen pencils.....	15	
		25 cloth lined envelopes.....	4 00	
		1,000 official envelopes.....	6	
		3 ivory pounce boxes.....	1 00	
		1 ivory propelling pencil.....	1 00	
		1 blank book.....	1 00	
		1 ream copying paper.....	16	12 19
		2 pump inkstands.....		

Oct	13 23	James Kelly John C. Rivers	Requiring two pitcher	1 16	60
			Ruling 160 requisitions.....	2 30	
			Ruling 920 blank vouchers.....	2 30	
			Ruling 920 form D.....	2 30	
			Ruling 920 form E.....	2 30	
Nov.	31	William H. Nalley	Ruling 920 form K	2 30	10 35
			Ruling and binding Record of Squadrons.....	4 50	
			Ruling and binding 2 6-quire Record Books.....	19 50	
			1 step-ladder		
			Making bookcase.....	27 50	
Dec.	31	Marsh B. Clark L. J. Middleton Blanchard & Mohun	1 fire screen.....	2 00	29 50 3 00 19 66
			Washing towels for quarter	25	
			Ice during the year 1860	75	
			1 blank book	1 00	
			1 arm-rest.....	10 50	
			1 ream foolscap.....	20	19 53
			3 reams letter paper.....	50	
			1 ream letter paper	8	
			1 inkstand	1 50	
			1 pair scissors	1 00	
			1 penknife	1 50	
			1 gross pens.....	75	
			500 letter envelopes.....	75	
			1 box wax matches	40	
			2 dozen wax tapers.....	50	
			1 blank book.....	60	
			6 pieces India-rubber.....		
			1 ream waste paper	4 00	
			Binding 2 volumes Letters	75	
			Binding 1 volume Medical Journal.....	1 50	
			Binding 2 volumes Journal Medical Sciences.....	2 00	
			Binding 1 volume Press Letters.....	1 50	
			Binding 2 volumes Brathwaite's Epitome.....	75	
			Binding 1 volume Journal Medical Sciences.....	75	
			Binding 1 volume Medical Times.....		
		William H. Nalley	Binding 2 volumes Letters	4 00	19 53
			Binding 1 volume Medical Journal.....	75	
			Binding 2 volumes Journal Medical Sciences.....	1 50	
			Binding 1 volume Press Letters.....	2 00	
			Binding 2 volumes Brathwaite's Epitome.....	1 50	
			Binding 1 volume Journal Medical Sciences.....	75	
			Binding 1 volume Medical Times.....	75	

Statement of the contingent expenses of the office of the Secretary of the Navy, &c.—Continued.

Date.	To whom paid.	For what paid.	Amount.	Total.
1860.				
Dec. 31	Wm. H. Nalley—Continued.	Making 1 Guard-Book Regulations	\$1 25	
		Binding 1 Quarterly Reports	2 00	\$14 50
1861.				1 05
Jan. 21	C. Bohn	3 copies Department Directories .....	.....
29	John C. Rives	Binding 480 copies blank forms	1 20	
		Binding 109 copies Forms of Expenditures	15 00	
Feb. 1	William M. Browne	1 copy Daily Constitution .....	.....	16 20
11	H. Blau	Making and hanging 1 window screen .....	.....	3 50
16	William H. Nalley	Ruling and inserting 4 sheets in Letter Book	50	1 75
		Binding 1 volume Mayne's Lexicon	75	
		Binding 1 volume Medical Journal	75	
		Binding 1 Chirurgical Review	75	
		Binding United Service Journal	1 50	
		Daily Constitution .....	.....	4 25
21	George W. Bowman	3 Congressional Directories .....	.....	1 33
March 31	Taylor & Maury	Washing towels for quarter .....	.....	1 13
	M. B. Clark	1 Almanach de Gotha	1 75	3 00
	Blanchard & Mohun	1 ream envelope paper	1 00	
		1 bottle copying ink	50	
		1 gross steel pens	1 00	
		500 letter envelopes	1 50	
		1 pound sealing wax	50	
		4 ream letter paper	2 63	
		200 letter envelopes	60	
		2 brooms	75	
		1 whialk brush	38	
		1,000 official envelopes	4 00	
		1 muelage brush	25	
		3 packs note paper	2 00	

May	13	Gaies & Seston.....	100 envelopes.....	30
June	29	Marsh B. Clark.....	1 ream note paper.....	3 00
			6 pen-holders.....	25
			6 papers black sand.....	75
			1 ream copying paper.....	1 00
			Subscription to Daily Intelligencer.....	
			1 dozen towels.....	4 00
			2 dozen cakes soap.....	3 00
			Washing towels for quarter.....	3 00
				10 00
			Ruling and binding Applications for Orders.....	9 00
			Ruling 920 receipts.....	4 60
			Binding 1 volume Letters.....	2 00
				13 26
			1 blank book.....	1 25
			1 pound gum-arabic.....	50
			500 letter envelopes.....	1 50
			12 bottles carmine ink.....	3 00
			1 dozen Faber's pencils.....	60
			1 penknife.....	1 50
			1 bottle copying ink.....	50
			1 quart black ink.....	30
			1 dozen blotting boards.....	50
			1 ream letter paper.....	3 50
			1 gross steel pens.....	1 00
			2 quires foolscap.....	50
			1 British Navy List.....	88
				15 53
				280 41

RECAPITULATION.

Office of the Secretary of the Navy.....	\$3,902 77
Bureau of Yards and Docks.....	441 48
Bureau of Ordnance and Hydrography.....	480 98
Bureau of Construction, Equipment, and Repair.....	321 67
Bureau of Provisions and Clothing	424 76
Bureau of Medicine and Surgery.....	280 41
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NAVY DEPARTMENT, *March 24, 1862.*

TRANSPORTS FOR THE ARMY OF THE POTOMAC.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

Resolution of the House of 17th instant, transmitting information in relation to transports furnished for the army of the Potomac.

MARCH 26, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., March 19, 1862.

SIR: In answer to the resolution of the 17th, adopted by the House on motion of Mr. Wilson, I have the honor to state that on the application of the general commanding to be supplied with transports for the army of the Potomac directions were given by this department to General Meigs, the quartermaster general, to furnish them. He was instructed to detail a competent officer of his department to procure them, and to make all the contracts. John Tucker, esq., Assistant Secretary, was detailed to assist in the operation. What has been done under these instructions is detailed in the letter of Mr. Tucker, hereto annexed,

Very respectfully, your obedient servant,

EDWIN M. STANTON,
Secretary of War.

HON. GALUSHA A. GROW,
Speaker of the House of Representatives.

WAR DEPARTMENT,
Washington City, D. C., March 19, 1862.

SIR: In response to the resolution of the House of Representatives, "that the Secretary of War be requested to inform the House by whom the vessels recently chartered under the direction of the War Department were chartered; what compensation such person has received or is to receive for such services; whether any persons have been acting under the authority or by direction or permission of the person authorized by the department to effect such charters, in

regard to effecting the same; who such persons are; what compensation such persons have received, or are to receive, for such services; and whether, in all such charters, any person acting directly or indirectly for the government has charged the persons from whom such vessels have been chartered any percentage on the amount of the charter, or any other compensation, and what has been charged," I have the honor to state that very large transportation by water was required by Major General McClellan, the quartermaster general detailed to the Army of the Potomac, and I have the honor to state that I have requested Captain H. C. Hodges, assistant quartermaster, to this duty, and I was requested to assist him. All parties who had offered suitable vessels in answer to your advertisement for transports were requested to meet us. Without further resort to newspapers, it was made as public as possible that the government were in need of such transportation, and desired to deal directly with the owners. A large number were chartered by direct negotiation with the owners, while others made their application through ship brokers. A decided preference was given to the former. Captain Hodges and myself received only our regular compensation as assistant quartermaster and Assistant Secretary of War, respectively. No other persons have been acting under the authority or by the direct permission of Captain Hodges or myself to effect such charters, and consequently no compensation has been or is to be paid for such services, and no person acting directly or indirectly for the government has charged the persons from whom such vessels were chartered any percentage on the amount of the charter, or any other compensation.

Very respectfully, your obedient servant,

JOHN TUCKER,
Assistant Secretary of War

Hon. E. M. STANTON,
Secretary of War.

CHARGES FOR EXAMINATION OF INVALID PENSIONERS.

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

IN ANSWER TO

Resolution of the House of 14th instant, in relation to charges for periodical examinations of invalid pensioners.

MARCH 26, 1862.—Referred to the Committee on Invalid Pensions and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, March 25, 1862.

SIR: I have the honor to communicate herewith a report from the Commissioner of Pensions, which furnishes the information requested by a resolution of the House of Representatives of the 14th instant, in relation to charges for periodical examinations of invalid pensioners.

I am, with great respect, your obedient servant,

CALEB B. SMITH,
Secretary of the Interior.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

PENSION OFFICE, *March 24, 1862.*

SIR: I have the honor to acknowledge the receipt of the resolution of the 14th instant of the House of Representatives, requesting "the Secretary of the Interior to report to this House what charges, if any, are authorized by law to be made against invalid pensioners for periodical examinations by physicians, or for any other purpose, and whether any charges have been made by any of the pension agents in excess of those authorized by law," and in obedience to your order of the 17th instant, indorsed thereon, I would respectfully report:

That the second section of the act of March 3, 1859, requires that every two years the affidavit of two physicians, stating the continuance of the disability for which the pension was originally granted, and the rate of such disability at the time of making the affidavit, shall accompany the application of the invalid pensioner for the payment of his pension, but does not authorize

the selection of any physicians or surgeons to perform the duty, nor fix the amount of fees to be received by them.

With few exceptions these biennial examinations have been made by citizen physicians or surgeons, and although their charges have not been uniform, yet from the concurrent statements of pensioners and of several pension agents, I am inclined to believe that the prevailing practice has been to charge each pensioner the sum of five dollars. There are reasons for believing that a less sum may have been paid in some localities, but frequent complaints have been made that from seven to ten dollars have been exacted, and in one place a pension agent communicated to the office that an attempt was making to obtain twenty dollars. From a statement recently received, I apprehend that some of these high rates have been influenced by the degree of disability certified to.

As the laws relating to invalids only contemplate the continuance of a pension during and according to the degree of disability, these biennial examinations would seem to be necessary in order to determine the facts in each case. Under these circumstances, I would call your attention to a recommendation of my predecessor in his annual report for 1859, in which I most cordially concur, that, if adopted, would obviate the complaints against the operation by that act. He says: "I would suggest the propriety of so amending the act of Congress on this subject as to authorize the selection, by the department, of one or more examining surgeons in each State and Territory, to be paid by government in proportion to their services. This would relieve the pensioners of the charge to which they are now unjustly subjected, and devolve the expense upon the United States, for whose protection and benefit the examination is alone designed, and at the same time secure more thorough and satisfactory examinations."

This act also provides "that where a pension shall have been originally granted for a total disability, in consequence of the loss of a limb, or other cause, which cannot, either in whole or in part, be removed, the above affidavit shall not be necessary to entitle the applicant to payment." As this affidavit is made a part of the vouchers on which an invalid pension is paid, the sufficiency of the same, and from whom it shall be required, is confided to the accounting officers of the Treasury Department. The practice under it has been to exempt from biennial examination only those who have lost an arm or a leg, and have an unquestioned right to a pension for "total disability." There are disabilities arising from the loss of one or more fingers and toes, the total loss of sight, or of an eye, which "cannot, either in whole or in part, be removed," that are in my view as "total" in their *nature*, but not all of them in *degree*, as the loss of an arm or leg, and should be exempt from the biennial examination. As there are doubts upon the construction of this proviso, I would recommend, as an act of justice towards this class of pensioners, an amendment of the act, so that they shall hereafter be considered as exempts.

The regulations require at each semi-annual payment the deposition of each pensioner, to be subscribed and sworn to before a magistrate, and his official character certified to. If an attorney is employed, then the power must be acknowledged, and the oath of attorney administered to him when he signs the receipts for the money at the agency. The Treasury Department has authorized, and this office requested, pension agents to file in the agency a proper certificate of the official character of such magistrates as usually act in the preparation of vouchers, and when this official character is within their own knowledge, they are permitted to waive the production of the certificate of the clerk of the court. This has been done for the purpose of saving to the pensioners the trouble, delay, and no inconsiderable item of expense, but to what extent it has been of practical benefit is not known, though it has been more or less observed at several agencies.

The charges for administering the oaths, and for the certificate of the clerk of the court, are, or should be, governed by the laws of the State in which the

pensioner resides, or where the vouchers are executed; but whether the following rates, which are charged, are according to law or to a prevailing custom I am unable to say:

Deposition of a pensioner, 25 cents.

Acknowledging a power of attorney, 25 cents.

Oath of attorney, 25 cents.

Certificate of clerk of court, whenever necessary, 50 to 75 cents.

These sums by no means correspond with the aggregate which they are compelled by unscrupulous persons to pay. It is too frequently, for the deposition alone, one dollar and upwards, and, including the others, one dollar and a half to an indefinite amount. A poor widow quite recently had forcibly taken from her six dollars and eighty-nine cents out of sixteen dollars and eighty-nine cents, received by an attorney, who justified his conduct upon the ground that he never charged less than five dollars for his services in similar cases.

When it is considered that printed blank forms are gratuitously furnished, leaving but little writing to fill them up, it must be admitted that the lowest sum above named is a liberal compensation for the service required, and perhaps more than is necessary. The forms are now so arranged, with printed directions, that a person of ordinary intelligence can execute them. These unjustifiable extortions would seem to call for some legislative provision by Congress, or on the part of the States, to protect pensioners from them. It could probably be done by limiting the expense, in the case of a pensioner who personally draws his stipend, to a small specific sum, and when an attorney's services are required another specific sum might be added and the certificate of the clerk of court reduced. The increase that will shortly be added to the roll of pensioners will require a corresponding increase in the business of preparing vouchers, and presents a favorable opportunity for regulating the compensation.

In reply to the inquiry in the last part of the resolution I would respectfully state that, by an act of Congress, pension agents are authorized to administer oaths on papers for the payment of pensions, the compensation for which is the same as the State in which they are allows to its own officers for the same service. As this service is oftentimes rendered in connexion with the preparation of vouchers for pensioners who apply in person at the agency, the charge made is from twenty-five to fifty cents, and, as has been found upon investigation, at a less rate, usually, than is made by those outside of the agency. When an agent employs no permanent clerk he procures the services of an assistant at each semi-annual period for a few days, and compensates him out of the fees derived from this source. For administering the oath to a pensioner or to an attorney I am not aware that any agent has been open to the allegation of having taken a sum in excess of that authorized by law.

From time to time numerous complaints have been received of the expense to which pensioners are subjected in drawing their pensions, and it is frequently alleged that this has been retained out of their pension money by the agent; but, on inquiry into the facts, it appeared that the agent had nothing to do with it but to pay the money, or to have administered the oath of attorney for twenty-five cents. All complaints against agents have been promptly investigated, and in nearly every instance an attorney was employed to prepare the vouchers and draw the stipend; but it may be that when excessive sums as compensation are retained the matter is so represented as to convey the impression, or else the pensioner infers, that it has been withheld by the pension agent.

It gives me pleasure to state that during the past year several of the agents have arranged, so far as they could, to lessen the expenses incurred in drawing pensions; but unless the pensioners reside near the agency they may not be able to avail themselves of it. Their ignorance of business transactions, and

4 CHARGES FOR EXAMINATION OF INVALID PENSIONERS.

condition in life, makes them too often the victims of the cupidity of others, and against which neither the department nor its agents can afford them any relief.

I am, very respectfully, your obedient servant,

JOSEPH H. BARRETT,
Commissioner.

Hon. C. B. SMITH,
Secretary of the Interior.

MARY A. BERAULT, ADMINISTRATRIX OF THE LATE JOSEPH
WHEATON.

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

IN ANSWER TO

A resolution of the House of the 14th instant, relative to the claim of Mary A. Berault, administratrix of Joseph Wheaton.

MARCH 28, 1862 — Referred to the Committee on Revolutionary Claims, and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, March 27, 1862.

SIR: I have the honor to acknowledge the receipt of a resolution of the House of Representatives adopted on the 14th instant, referring to this department for adjustment the claim of Mary A. Berault, administratrix of the late Joseph Wheaton.

Upon an examination of the papers referred to me, I am fully satisfied of the justice of this claim, and concur in the report of the Committee on Revolutionary Claims in its favor. The services of Lieutenant Wheaton were of a highly meritorious character, and continued from a time anterior to the passage of the act of Congress of October, 1780, promising half pay for life to those who should serve until the end of the war, until the final and successful termination of the revolutionary struggle.

The principle upon which the claim is based has been recognized and sustained by the Court of Claims in the case of Dr. Baird, and the decision of that court has received the sanction of Congress.

I should not hesitate to adjust and allow the claim, as recommended by the resolution of the House of Representatives, if any fund were placed at my disposal from which it could be paid; but no appropriation has been made which is applicable to the payment of claims of this character,

I therefore return the papers, with a recommendation that an appropriation be made by Congress for its payment.

I am, sir, with great respect, your obedient servant,

CALEB B. SMITH,

Secretary of the Interior.

HON. GALUSHA A. GROW,
Speaker of the House of Representatives.

MEDICAL DEPARTMENT OF THE ARMY.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

Resolution of the House of Representatives of February 10, relative to the efficiency of the medical department of the army,

MARCH 28, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., March 26, 1862.

SIR: In answer to a resolution of the House of Representatives, passed February 10, ultimo, I have the honor to state that the War Department, at the date of that resolution, having but recently come into my charge, I was unable to express any opinion as to the efficiency of the present organization of the medical department of the United States army. But the result of my observation is, that there does exist an urgent necessity of reorganizing and remodelling the medical bureau.

Your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

GAS AND COAL CONSUMED BY RESTAURANTS.

LETTER

FROM THE



COMMISSIONER OF PUBLIC BUILDINGS,

IN ANSWER TO

Resolution of the House of 26th instant, in relation to the consumption of gas and coal by restaurants in the Capitol.

MARCH 28, 1862.—Referred to the Committee on Public Buildings and Grounds, and ordered to be printed.

OFFICE OF THE COMMISSIONER OF PUBLIC BUILDINGS,
Capitol of the United States, Washington City, March 27, 1862.

SIR: I have the honor to acknowledge the receipt of a resolution of the House of Representatives in the following words:

“Resolved, That the Commissioner of Public Buildings be directed to inform the House of Representatives what amount of coal and gas is consumed by the restaurants in the Capitol, and by whom the expense thereof is paid.”

The coal for the use of the Senate and House of Representatives is purchased by the Secretary of the Senate and Clerk of the House. I understand that all the cooking for the restaurants is done with coal thus purchased, and from the information given me I should judge that about five tons per month are used. Whether paid for by the keepers of the restaurants or not, I have no official means of ascertaining.

The gas is paid for by the United States. There are seventy-three burners used in the restaurants, each burning six feet per hour. These burners are lighted from early morning until late evening, and some of them, I am informed, are burned through the night. I should suppose thirteen hours of the twenty-four would be a fair average for each burner, which would give seventy-eight feet of gas per day for each burner, and 5,694 feet for the seventy-three burners. Government pays three dollars and fifteen cents for each thousand feet of gas burned, so that the gas burned each day by the restaurants costs seventeen dollars and ninety-three cents, or about five hundred dollars per month.

I am, with high respect, your obedient servant,

B. B. FRENCH,
Commissioner of Public Buildings.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

MILITARY AND NAVAL DEFENCES.

HOUSE OF REPRESENTATIVES, U. S., March 26, 1862.

Resolved, That fifteen hundred and fifty copies of Executive Document No. 243, 1st session 24th Congress, Executive Document No. 206, 1st session 26th Congress, and Executive Document No. 5, 1st session 32d Congress, on fortifications, floating batteries, and other means of defence, be printed for the use of the House.

HO. REFS., EX. DOC. No. 243, 24th CONGRESS, 1st SESSION.

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

TO THE

Senate of the United States, accompanied with reports from the Secretaries of War and Navy, relative to the military and naval defences of the country.

APRIL 8, 1836.—Read, and ordered that it be printed; and that so much as relates to the military defences be referred to the Committee on Military Affairs, and so much as relates to the naval defences to the Committee on Naval Affairs.

To the Senate:

I transmit herewith reports from the Secretaries of the War and Navy Departments, to whom were referred the resolutions adopted by the Senate on the 18th of February last, requesting information of the probable amount of appropriations that would be necessary to place the land and naval defences of the country upon a proper footing of strength and respectability.

In respect to that branch of the subject which falls more particularly under the notice of the Secretary of War, and in the consideration of which he has arrived at conclusions different from those contained in the report from the Engineer bureau, I think it proper to add my concurrence in the views expressed by the Secretary.

ANDREW JACKSON.

WASHINGTON, April 8, 1836.

DEPARTMENT OF WAR, *April 7, 1836.*

SIR: In conformity with your instructions, I have the honor to transmit reports from the engineer and ordnance departments, furnishing so much of the information required by the resolution of the Senate of February 18, 1836, as relates to the fortifications of the country, and to a supply of the munitions of war. The former branch of this subject has required laborious investigations on the part of the officers charged with this duty, and their report has therefore been longer delayed than, under other circumstances, would have been proper; but the whole matter was too important to have the interests involved in it sacrificed to undue precipitancy.

The engineer report was received at the department on Friday last, and I have embraced such portions of the intervening time as other official calls and a slight indisposition would allow me to devote to its examination. I did not consider that any suggestions I could make would justify a further delay at this advanced stage of the session, while, at the same time, I am aware that this letter will need all the allowance which these circumstances can claim for it.

It is obvious that, in the consideration of any general and permanent system of national defence, comprehensive views are not only necessary, but professional experience and a knowledge of practical details; such information, in fact, as must be obtained by long and careful attention to the various subjects which form the elements of this inquiry. Although, therefore, I do not concur in all the suggestions contained in these reports, and more particularly in those which relate to the nature and extent of some of our preparations, still I have thought it proper to lay them before you, rather than to substitute any peculiar views of my own for them. Both furnish facts highly interesting to the community, and if they anticipate dangers which it may be thought are not likely to happen, and suggest preparations which future exigencies will not probably require, they are still valuable documents, presenting the necessary materials for the action of the legislature. The report from the engineer department, in particular, evinces an accurate knowledge of the whole subject, while, at the same time, its general views are sound and comprehensive. I consider it a very able document.

Under these circumstances, I have thought it proper to submit some general remarks, explanatory of my own views, concerning a practical system of defence, and which will show how far the plans and details are in conformity with my opinion. I feel that this course is due to myself.

I shall confine my observations to the maritime frontier. Our inland border rests, in the southwest and northeast, upon the possessions of civilized nations, and requires defensive preparations to meet those contingencies only which, in the present state of society, we may reasonably anticipate. In the existing intercourse of nations, hostilities can scarcely overtake us so suddenly as not to leave time to move the necessary force to any point upon these frontiers threatened with attack. I am not aware of any peculiar position upon either of these lines of separation which commands the approaches to the country, or whose possession would give much superiority to an invading or defensive force. In fact, the division is, in both cases, an artificial line through much of its extent, and a portion of the natural boundary offers scarcely any impediment to military operations. Under such circumstances, it seems altogether inexpedient to construct expensive fortifications, which would do little more than protect the space under cover of their guns; which are not required as places of *depot*; which guard no avenue of communication, and which would leave the surrounding country penetrable in all directions. Without indulging in any improper speculations concerning the ultimate destiny of any portion of the country in juxtaposition with us, or looking for security to any political change, we may safely anticipate that our own advance in all the elements of power will be at least equal

to that of the people who adjoin us; nor does the most prudent forecast dictate any precautions, founded upon the opinion that our relative strength will decrease and theirs increase. The lake frontier, indeed, presents some peculiar consideration; and I think the views submitted by the engineer department, respecting Lake Champlain, are entitled to much weight. This long, narrow sheet of navigable water opens a direct communication into the States of New York and Vermont, while its outlet is in a foreign country, and is commanded by a position of great natural strength. It is also within a few miles of the most powerful and populous portion of Canada, and open to all its resources and energies. With a view, perhaps, to possible rather than to probable events, it may be deemed expedient to construct a work at some proper site within our boundary, which shall close the entrance of the lake to all vessels ascending its outlet. As such a work, however, would be an advanced post, and, from circumstances, peculiarly liable to attack, its extent and defences should be in proportion to its exposure.

There is already a considerable commercial marine upon the four great lakes, Ontario, Erie, Huron, and Michigan, which are open to the enterprise of our citizens. And this will increase with the augmenting population which is flowing in upon the regions washed by these internal seas. It is obvious that, from natural causes, the physical superiority will be found upon the southern shores of these lakes. The resolution of the Senate embraces the inquiry into the expediency of constructing permanent fortifications in this quarter. And this inquiry properly divides itself into two branches:

- 1st. The policy of fortifying the harbors on the lakes; and,
- 2d. The policy of commanding, by permanent works, the communications between them.

Both of these measures presuppose that the naval superiority upon these waters may be doubtful. But it is difficult to foresee the probable existence of any circumstances which would give this ascendancy to the other party. It is unnecessary to investigate the considerations which bear upon this subject, as they are too obvious to require examination. They are to be seen and felt in all those wonderful evidences of increase and improvement which are now in such active operation. A victorious fleet upon these lakes could disembark an army at almost any point. If a harbor were closed by fortifications they would only have to seek the nearest beach, and land their men from boats, so that no defences we could construct would secure us against invasion; and temporary block-houses and batteries would probably be found sufficiently powerful to repel the attacks of any vessels seeking to enter the narrow harbors upon the lakes, if we could foresee the existence of any circumstances which would induce an enemy to endeavor to force an entrance into them.

As to the communication between the lakes, the inquiry, from geographical causes, is necessarily restricted to that from Lake Erie to Lake Huron, and to the straits of Michilimackinac. Of the former, almost sixty miles consist of two rivers, completely commanded from their opposite banks, while the entrance into one of these, the river St. Clair, is impeded by a bar, over which there are but about eight feet of water. No armed vessels could force their way up these rivers while the shores were in an enemy's possession, who might construct batteries at every projecting point, and who, in fact, might in many places sweep the decks with musketry. As to the straits of Michilimackinac, they are too broad to be commanded by stationary fortifications, even if any circumstances should lead to the construction and equipment of a hostile fleet upon the bleak and remote shores of Matchedask bay, in the northeastern extremity of Lake Huron.

I am therefore of opinion that our lake frontier requires no permanent defences, and that we may safely rely for its security upon those resources, both in the *personnel* and *materiel*, which the extent and other advantages our country insure to us, and which must give us the superiority in that quarter.

It may, perhaps, be deemed expedient to establish a *depot* for the reception of munitions of war in some part of the peninsula of Michigan, and to strengthen it by such defences as will enable it to resist any *coup de main* which may be attempted. From the geographical features of the country, our possessions here recede from their natural points of support, and are placed in immediate contact with a fertile and populous part of the neighboring colony. In the event of disturbances the ordinary communications might be interrupted, and it would probably be advisable to have in deposit a supply of all the necessary means for offensive or defensive operations, and to place these beyond the reach of any enterprising officer who might be disposed, by a sudden movement, to gain possession of them. The expenditure for such an object would be comparatively unimportant, even should the contingency be judged sufficiently probable to justify precautionary measures.

I had the honor, in a communication to the chairman of the Committee on Military Affairs of the Senate, dated February 19, 1836, a copy of which was sent to the chairman of the Committee on Military Affairs of the House of Representatives, to suggest the mode best adapted, in my opinion, to secure our frontier against the depredations of the Indians. The basis of the plan was the establishment of a road from some point upon the upper Mississippi to Red river, passing west of Missouri and Arkansas, and the construction of posts in proper situations along it. I think the ordinary mode of construction ought not to be departed from. Stockaded forts, with log block-houses, have been found fully sufficient for all the purposes of defence against Indians. They may be built speedily, with little expense, and, when necessary, by the labor of the troops. Our Indian boundary has heretofore been a receding, not a stationary one, and much of it is yet of this character. And even where we have planted the Indians who have been removed, and guaranteed their permanent occupation of the possessions assigned to them, we may find it necessary, in the redemption of the pledge we have given to protect them, to establish posts upon their exterior boundary, and thus prevent collisions between them and the ruder indigenous tribes of that region. I think, therefore, that no works of a more permanent character than these should be constructed upon our Indian frontier. A cordon established at proper distances upon such a road, with the requisite means of operation deposited in the posts, and with competent garrisons to occupy them, would probably afford greater security to the advanced settlements than any other measures in our power. The dragoons should be kept in motion along it during the open season of the year, when Indian disturbances are most to be apprehended, and their presence and facility of movement would tend powerfully to restrain the predatory disposition of the Indians; and if any sudden impulse should operate or drive them into hostilities, the means of assembling a strong force, with all necessary supplies, would be at hand, and, as circumstances permit, the posts in the Indian country now in the rear of this proposed line of operations should be abandoned and the garrisons transferred to it.

But it is upon our maritime frontier that we are most exposed. Our coast for three thousand miles is washed by the ocean, which separates us from those nations who have made the highest advances in all the arts, and particularly in those which minister to the operations of war, and with whom, from our intercourse and political relations, we are most liable to be drawn into collision. If this great medium of communication, the element at the same time of separation and of union, interposes peculiar obstacles to the progress of hostile demonstrations, it also offers advantages which are not less obvious, and which, to be successfully resisted, require corresponding arrangements and exertions. These advantages depend on the economy and facility of transportation, on the celerity of movement, and on the power of an enemy to threaten the whole shore spread out before him, and to select his point of attack at pleasure. A powerful hostile fleet upon the coast of the United States presents some of the features

of a war, where a heavy mass is brought to act against detachments which may be cut up in detail, although their combined force would exceed the assailing foe. Our points of exposure are so numerous and distant that it would be impracticable to keep, at each of them, a force competent to resist the attack of an enemy, prepared by his naval ascendancy, and his other arrangements, to make a sudden and vigorous inroad upon our shores. It becomes us, therefore, to inquire how the consequences of this state of things are to be best met and averted.

The first and most obvious, and in every point of view the most proper, method of defence is an augmentation of our naval means to an extent proportioned to the resources and the necessities of the nation. I do not mean the actual construction and equipment of vessels only. The number of those in service must depend on the state of the country at a given period: but I mean the collection of all such materials as may be preserved without injury, and a due encouragement of those branches of interest essential to the growth of a navy, and which may be properly nurtured by the government; so that, on the approach of danger, a fleet may put to sea, without delay, sufficiently powerful to meet any force which will probably be sent to our coast.

Our great battle upon the ocean is yet to be fought, and we shall gain nothing by shutting our eyes to the nature of the struggle, or to the exertions we shall find it necessary to make. All our institutions are essentially pacific, and every citizen feels that his share of the common interest is affected by the derangement of business, by the enormous expense, and by the uncertain result, of a war. This feeling presses upon the community and the government, and is a sure guarantee that we shall never be precipitated into a contest, nor embark in one, unless imperiously required by those considerations which leave no alternative between resistance and dishonor. Accordingly, all our history shows that we are more disposed to bear, while evils ought to be borne, than to seek redress by appeals to arms; still, however, a contest must come, and it behooves us, while we have the means and the opportunity, to look forward to its attendant circumstances, and to prepare for the consequences.

It is no part of my object to enter into the details of a naval establishment. That duty will be much more appropriately and ably performed by the proper department; but as some of the views I shall present on the subject of our system of fortifications must be materially affected by any general plan of naval operations which, in the event of hostilities, might be adopted, I am necessarily led to submit a few remarks, not professional, but general, upon the extent and employment of our military marine.

There is as little need of inquiry now into our moral as into our physical capacity to maintain a navy, and to meet upon equal terms the ships and seamen of any other nation. Our extended commerce, creating and created by those resources which are essential to the building and equipment of fleets, removes all doubt upon the one point, and the history of our naval enterprise, from the moment when the colors were first hoisted upon the hastily-prepared vessels at the commencement of our revolutionary struggle to the last contest in which any of our ships have been engaged, is equally satisfactory upon the other. The achievements of our navy have stamped its character with the country and the world. The simple recital of its exploits is the highest eulogium which can be pronounced upon it.

With ample means, therefore, to meet upon the ocean, by which they must approach us, any armaments that may be destined for our shores, we are called upon by every prudential consideration to do so. In the first place, though all wars in which we may be engaged will probably be defensive in their character, undertaken to repel or resent some injury, or to assert some right, and rendered necessary by the conduct of other nations, still the objects of the war can be best attained by its rigorous prosecution. Defensive in its causes, it should be

offensive in its character. The greater injury we can inflict upon our opponent, the sooner and the more satisfactory will be the redress we seek. Our principal belligerent measures should have for their aim, to attack our antagonist where he is most vulnerable. If we are to receive his assaults, we abandon the vantage ground, and endeavor, in effect, to compel him to do us justice by inviting his descent upon our shores, and by all those consequences which mark the progress of an invading force, whether for depredation or for conquest. By the ocean only can we be seriously assailed, and by the ocean only can we seriously assail any power with which we are likely to be brought into collision.

But, independently of the policy of making an adversary feel the calamities of war, it is obvious that, even in a defensive point of view alone, the ocean should be our great field of operations. No one would advocate the project of endeavoring to make our coast impervious to attack. Such a scheme would be utterly impracticable. A superior fleet, conveying the necessary troops, could effect a landing at numerous points upon our shores, even if the best devised plan of fortifying them were consummated; and, from the nature of maritime operations, such a fleet could bring its whole strength to bear upon any particular position, and by threatening or assailing various portions of the coast, either anticipate the tardy movements of troops upon land, and effect the object before their concentration, or render it necessary to keep in service a force far superior to that of the enemy, but so divided as to be inferior to it upon any given point. These dangers and difficulties would be averted or avoided by the maintenance of a fleet competent to meet any hostile squadrons which might be detached to our seas. Our coast would thus be defended on the ocean, and the calamities of war would be as little felt as the circumstances of such a conflict would permit.

As to the other advantages of a navy, in the protection of commerce, they do not come within the scope of my inquiries, and are not therefore adverted to; nor is it necessary, or indeed proper, that I should present those considerations of distance, of exposure, and of station, which would render a fleet numerically inferior in the aggregate to that of the enemy, yet still sufficiently powerful, upon our own coasts, to meet and overcome any armament which could probably be sent here.

It seems to me, therefore, that our first and best fortification is the navy. Nor do I see any limit to our naval preparations, except that imposed by a due regard to the public revenues from time to time, and by the probable condition of other maritime nations. Much of the *materiel* employed in the construction and equipment of vessels is almost indestructible, or at any rate may be preserved for a long series of years; and if ships can be thus kept without injury upon the stocks, by being built under cover, I do not see what should restrain us from proceeding to build as many as may be deemed necessary, and as fast as a due regard to their economical and substantial construction will permit, and to collect and prepare for immediate use all the munitions of war, and other articles of equipment not liable to injury or decay by the lapse of time. Nor do I see that these preparations should be strictly graduated by the number of seamen who would probably enter the service at this time, or within any short period. To build and equip vessels properly requires much time, as well with reference to the execution of the work as to the proper condition of the materials employed. And the costly experiment made by England, when she too hastily increased her fleet, about thirty years ago, by building ships with improper materials and bad workmanship, ought to furnish us with a profitable lesson. These vessels soon decayed, after rendering very little service. Naval means should therefore be provided at a period of leisure, to be ready for immediate employment in a period of exigency; and a due regard to prudence dictates that these means should so far exceed the estimated demands of the service as to supply in the shortest time any loss occasioned by the hazards of

the ocean and the accidents of war. We may safely calculate that the number of seamen in the United States will increase in proportion to that rapid augmentation which is going on in all the other branches of national interest. If we assume that at a given period we may expect to embark in war, our capacity to man a fleet will exceed our present means by a ratio not difficult to ascertain. And even then, by greater exertions and perhaps higher wages, a larger portion may be induced to enter the naval service, while no exertions can make a corresponding addition to the navy itself, but at a loss of time and expense, and a sacrifice of its permanent interest.

But whatever arrangements we may make to overcome any naval armaments sent out to assail us, we are liable to be defeated and to be exposed to all the consequences resulting from the ascendancy of an enemy. And the practical question is, what shall be done with a view to such a state of things? As I have already remarked, any attempt by fortifications to shut up our coast, so that an enterprising foe, with a victorious fleet, conveying a competent force, and disposed to encounter all the risk of such an expedition, could not make his descent upon the shore, would be useless in itself, and would expose to just censure those who should project such a scheme. And, on the other hand, the government would, if possible, be still more censurable were our important maritime places left without any defensive works. Between these extremes is a practical medium, and to ascertain where it lies we must briefly look at the various considerations affecting the subject.

What have we to apprehend in the event of a war? Is it within the limits of a reasonable calculation that any enemy will be able and disposed to debark upon our coast an army sufficiently powerful to lay siege to our fortifications and to endeavor, by this slow and uncertain process, to obtain possession of them? I put out of view the enormous expense attending such a plan; the distance of the scene of operations from the points of supply and support, with the consequent difficulties and dangers, and the possibility that the conveying fleet might be overpowered by a superior force, and the whole expedition captured or destroyed. All these are considerations which no prudent statesman, directing such an enterprise, will overlook. But beyond these is a question bearing still more directly upon the point under examination. Is there any object to be attained sufficiently important to justify the risk of placing a body of land troops before one of these works, too strong to be carried by a *coup de main*, and endeavoring to destroy the defence by a regular investment? I think there can be none.

I take it for granted that no nation would embark in the quixotic enterprise of conquering this country. Any army, therefore, thrown upon our coast would push forward with some definite object to be attained by a prompt movement and by vigorous exertions. Our experience, more than half a century ago, demonstrated that an invading force could command little more than the position it actually occupied. The system of fortifications adopted in Europe is not applicable to our condition. There military movements must be made upon great avenues of communication, natural or artificial, and these are closed or defended by fortresses constructed with all the skill that science and experience can supply, and with all the means that wealth and power can command. An invading army must carry these positions by escalade or by siege, or leave sufficient detachments to blockade them, or must turn them and move on with all the difficulties attending the interruption of their communication, and with the dangers which such a force in their rear must necessarily occasion. Works of this character are keys to many of the European states, whose political safety depends upon their preservation. Their possession enables their governments to meet the first shock of war, and to prepare their arrangements, political or military, to resist or avert the coming storm. And although, during some of the wars which arose out of the French revolution, when, from causes which history

is now developing, the armies of France set at defiance the received maxims of military experience, and justifying their apparent rashness by success, reduced, with unexampled facility, or carried on their operations almost in contempt of the strongest fortifications, the subjugation of each of which had been till then the work of a campaign, still the opinion is yet entertained by many that this system of defence is best adapted to the condition of the European community.

There is also a striking difference between the political situation of those countries and that of ours, which gives to these defensive preparations a character of importance which can never apply to the United States. The possession of a capital in the eastern hemisphere is too often the possession of the kingdom. Habits of feeling and opinion, political associations, and other causes, combine to give to the metropolis an undue ascendancy. Internal parties, contending for superiority, and external enemies, aiming at conquest, equally seek to gain possession of the seat of government. And the most careless observer of the events of the last half century must be struck with the fact that the fate of the capitals and the kingdoms of modern Europe are closely connected together. Under such circumstances, it may be prudent, by powerful fortresses, to bar the approaches to these favored places, and frequently to construct works to defend them from external attack, or to maintain their occupation against internal violence.

But there is nothing like this in our country, nor can there be till there is a total change in our institutions. Our seats of government are merely the places where the business of the proper departments is conducted, and have not themselves the slightest influence upon any course of measures, except what is due to public opinion and to their just share of it. If the machine itself were itinerant, the result would be precisely the same. Or, if by any of the accidents of war or pestilence, the proper authorities were compelled to change their place of convocation, the change would be wholly unobserved, except by the few whose personal convenience would be affected by the measure. Nor have our commercial capitals any more preponderating influence than our political ones. And although their capture by an enemy, and the probable loss of property, and derangement of business, which would be the result, might seriously affect the community, yet it would not produce the slightest effect upon the social or political systems of the country. The power belongs to all, and is exercised by all.

It follows, therefore, that an enemy could have no inducement to hazard an expedition against any of our cities, under the expectation that their capture and possession would lead to political results favorable to them. Washington may indeed be taken again, and its fall would produce the same emotion which was everywhere felt when its former capture was known. But an enemy would retire from it with as few advantages as marked its first abandonment, and if his course were the same, with as few laurels as he won by its possession. I make these remarks, because it seems to me that some of the principles of the European system of fortifications may possibly be transferred to this country, without sufficient attention having been given to those circumstances, both geographical and political, which require a plan exclusively adapted to our own condition.

I consider some of the existing and projected works larger than are now necessary, and calculated for exigencies we ought not, with the prospects before us, to anticipate. If such is the fact, the objection is not only to the expense of their construction and preservation, but also to the greater difficulty of defending them, and the increased garrisons which must be provided and maintained. The hypothesis upon which their extent has been determined is, that they may be exposed to investment, both seaward and landward, and that they ought to be capable of resisting a combined attack, or, in other words, that their

water batteries should be sufficient to repel an assailing squadron, and that their land defences should be sufficient to resist a besieging army.

It is certain that whatever works we erect should be so constructed as to be beyond the reach of any *coup de main* that would probably be attempted against them; and this capacity must depend upon their exposure and upon the facility with which they can be relieved. But this proposition is far different from one to construct them upon a scale of magnitude which presupposes they are to be formally invested by a powerful land force, and which provides for their ability to make a successful resistance. A dashing military or naval officer may be willing to risk something to get possession of an insulated post by a prompt movement, expecting to accomplish his enterprise before his adversary can be prepared, or succor obtained; and this, even when he looks to no other advantage than the capture of the garrison, and the effect which a brilliant exploit is calculated to produce; and when he is aware that he must abandon his conquest with as much celerity as he attained it. But formal investments of fortified places, with all their difficulties, and expense, and uncertainty, are only undertaken when there is some object of corresponding importance to be expected. We have works constructed which it would require armies to reduce. Have we any reason to anticipate that they will be assailed by a force proportioned to their magnitude?

I have already remarked that a European power cannot expect to retain permanent possession of any part of this country. If, therefore, he succeed in overcoming or eluding our fleets, and is prepared with a respectable land force, and ready to risk its employment upon our territory, he can land at many points which we cannot close against him. His debarkation is not a question of practicability, but of expediency. If a safe harbor or roadstead offers itself, and there is no defensive work to prevent his approach, he will, of course, land at the nearest point to the object of his marauding enterprise. If there is such a work, it will be a question of calculation whether it is better to attack and carry it, or to seek another, though more distant, point of debarkation. I think there can be little doubt but there are few, if any, positions in our country which an enemy would not under such circumstances avoid. He would be aware of the facility of communication which our rivers, canals, and railroads afford, of the powerful use we should be prepared to make of steam in its various forms of application, and of the immense force which in a short time could be concentrated upon a given point; and it is scarcely within the limits of possibility that he would venture formally to besiege one of our forts, or if he did, that he would not repent his rashness. Neither the co-operation of his fleet, nor the nearer proximity of the place of landing to the object of attack, would induce him to seek these advantages at the cost which must attend the slow process of besieging a fort, when, by removing to another position, he would land in safety, and save in time, in promptness of movement, and in his escape from the perils of a doubtful contest, more than he would lose by the difference in distance.

I am aware it may be objected that the weakness of a work might tempt an enemy to attack it, and that it may be supposed the power of some of our fortifications to resist a siege may hereafter furnish the true reason why they may not be compelled to encounter one. Certainly the stronger a work is, the less will it be exposed to danger. But this would not furnish a sufficient reason for making its defences out of reasonable proportion to its exposure. The true inquiry is, What circumstances will probably induce and enable an enemy to assail a given point, and with what force; and how can we best meet and repel him? And I believe a just consideration of this proposition will lead to the conclusion that there are scarcely any positions in our country where an enemy would venture to set down before a work too strong to resist a *coup de main*. In the view, therefore, which I take of this whole subject, it will be perceived that I do not merely suppose an enemy will not invest our larger works, but

that they would not do so were these works much inferior to what they are, both in their dimensions and construction.

What object would justify an enemy in landing an army upon our coast? He would not expect to lay waste the country, for such a mode of warfare is not to be anticipated in the present state of society. All that, under the most favorable circumstances, he could accomplish, would be to gain sudden possession of a town and levy contributions, or to destroy a naval establishment, commercial or military, and precipitately retire to his ships before his operations could be prevented, or his retreat intercepted. I cannot, therefore, concur in the suggestion made in the engineer report, that the first of the three great objects to be attained by the fortifications of the first class should be to "prevent an enemy from forming a permanent or even a momentary establishment in the country." It is not suited to the present and prospective situation of the United States. I understand the establishments herein contemplated are not the temporary occupation of naval arsenals and cities for the purpose of destruction or plunder, because these objects are specially enumerated, but are lodgments where armies may be stationed, and whence they may issue to commit inroads into the country.

I refer, in these remarks, to our maritime coast generally. There are, no doubt, certain points less equal to self-defence than others, and where the preparation must be greater. Of this class is the delta of the Mississippi, not only in consequence of its many avenues of approach, but because its great natural highway does not at present allow those lateral supplies of the *personnel*, which, from geographical formation, and from the state of the settlements, can be speedily thrown upon most other points of the country. This region, however, is admirably adapted to the use of steam batteries, and they will form its principal means of defence.

To apply these remarks to the plan of fortifications partly completed and partly projected. Fort Monroe, at Old Point Comfort, covers about sixty-three acres of ground, and requires, by the estimates of the engineer department, two thousand seven hundred men to garrison it in time of war. Its full armament consists of 412 pieces of different descriptions and calibre. I have been desirous of comparing its superficial extent with some of the European fortresses; but the necessary information could not be obtained within the short time that could be allowed for the inquiry. I understand from General Gratiot, however, that it is probably larger than almost any of the single works in Europe which do not enclose towns within their circuit. Drinkwater, in his history of the siege of Gibraltar, states that 572 guns were mounted upon that fortress.

The object to be attained by Fort Monroe, in conjunction with Fort Calhoun, intended to mount 232 guns, is to prevent an enemy from entering Hampton roads, a safe and convenient roadstead. This object is important, because this bay is perfectly landlocked, and has sufficient depth of water for the largest vessels, and is, withal, so near the capes of the Chesapeake that it furnishes the best station which an enemy could occupy for annoying our commerce, and for committing depredations upon the shores of that extensive estuary. But these works do not command the entrance into the Chesapeake; nor is Hampton roads the only safe anchorage for a hostile fleet. Their possession, therefore, does not exclude an enemy from these waters though they will compel him to resort to less convenient positions from whence to carry on his enterprises. A hostile squadron reaching the Chesapeake, and finding the entrance into Hampton roads guarded by sufficient works, though much less extensive than those at Fort Monroe, would necessarily consider whether the possession of that roadstead is so important as to justify the debarkation of a large body of land troops, and to attempt to carry the works by regular approaches, and this in the face of the strenuous efforts which would be made to relieve it by all the aids afforded by the most improved facilities of communication, and by the light

and heavy steam-batteries which, upon the approach of war, would be launched upon the Chesapeake, and which, during periods of calm, or in certain winds, could approach the hostile ships and drive them from their anchorage, or compel them to surrender, and most of which, from their draught of water, could take refuge in the inlets that other armed vessels could not enter. And even if the works were carried, they could not be maintained without the most enormous expense, nor in fact without efforts which no government three thousand miles off could well make, and all this, while Lynnhaven bay, York bay, the Rappahannock, Tangier island, the mouth of the Potomac, and many other places, furnish secure anchorage, and are positions from which an enemy, having the superiority, could not be excluded, and while, in fact, a great part of the Chesapeake may be considered as affording good anchorage ground for large ships. Neither of them is equal to Hampton roads, but most or all of them furnish stations for occupation and observation which would render it unnecessary to purchase the superior advantages of Hampton roads by the sacrifice and hazard which would attend the effort. The occlusion of this roadstead does not secure Norfolk, important as it is from its commerce and navy yard. It only prevents the access of ships-of-war to it. And against these there is an interior line of defence, which may be considered as accessory to, and, if necessary, independent of, the other. And a land force, deeming the destruction of the navy yard at Norfolk a sufficient object to justify such an expedition, would not sit down before Fort Monroe, if its scale of defence were far inferior to what it now is, but would debark at Lynnhaven bay, where there is no impediment, and march in five or six hours through an open country to Norfolk.

New York is, in every point of view, our most important harbor, and its defences should provide for every reasonable contingency. The engineer report recommends three classes of works: an interior one for the protection of the harbor; an exterior one to shut up Raritan bay; and a third to prevent a hostile fleet from approaching the city through the sound nearer than the vicinity of Throg's Point. The importance of the first class cannot be doubted. That of the second depends on the value of Raritan bay to an enemy as an anchorage ground, and on the utility of excluding him from a landing at Gravesend bay, upon Long Island, whence an army could march, without obstruction, to Brooklyn and New York. The third is proposed to be erected in order to bar his access to the lower part of the sound, or, more accurately speaking, to prevent his reaching Hell Gate, a natural barrier which no fleet could pass, and which is within ten miles of the city. Here, if his aim were New York, he would land, and would find no works to prevent his approach. The two forts proposed to be erected at Throg's Neck and Wilkin's Point, eight miles further up the sound, would compel him to debark beyond the reach of their guns, and would thus add that distance to his march, while on the north shore Harlem river would be interposed between him and the city. On the Long Island side there would be no difference but that occasioned by the distance.

It is obvious then that, in the consideration of this plan involving an estimated expenditure in the aggregate of \$5,807,969, and efficient garrisons in time of war of nine thousand men, a close investigation should be made into all the circumstances likely to influence the operations of an enemy. Is the anchorage ground between the Narrows and Sandy Hook of sufficient value to an enemy, looking to the risk of his occupation of the coast and to the doubts that may be reasonably entertained of the result of so great an experiment to be carried on, in fact, in the sea, to authorize the commencement of these works without a new examination? Or is the probability of the disembarkation of an army at Gravesend bay in preference to some other point upon the coast of Long Island, if a convenient one exists, so great as to require these preparations? The same questions may be asked respecting Wilkin's Point. The work at Throg's Point is in the process of construction, and as the river is only about

three-fourths of a mile wide at this place I think its completion would be sufficient for this line of defence till the proposed general examination can take place.

The situation of New York affords a fine theatre for the operation of floating batteries, and whether a sufficient number of them would secure it from the designs of an enemy better than the full completion of the extensive system of permanent fortifications recommended is a question deserving investigation. Such an investigation I recommend, and after all the necessary facts and considerations are presented the government should proceed to place this commercial metropolis of the country in a state of security.

The works at Newport cover about twenty acres and will mount 468 guns, and will need for their defence about two thousand four hundred men. I cannot myself foresee the existence of any circumstances which now call for a fortress of this magnitude in the very heart of New England; constructed not merely to command the harbor of Newport, but to resist a siege which would probably require nearly twenty thousand men to carry it on. I am at a loss to conjecture what adequate motive could induce a foreign government to detach a fleet and army upon this enterprise. The expense would be enormous. The French army that invaded Egypt was less than forty thousand men, and required for its protection and transportation between five and six hundred vessels. The army that conquered Algiers was about equal in force, and required, it is said, about four hundred transports besides the ships-of-war. This scale of preparation for enterprises against the shores of the Mediterranean may enable us to form some conception of the arrangements that would be necessary to send across the ocean to this country, in the present day of its power, an expedition strong enough to form an establishment upon our shores, and to furnish it with supplies necessary to its subsistence and operations.

It has been supposed, indeed, by the board of engineers, that an enemy would find sufficient reason for the occupation of Rhode Island in the consideration that it would afford a secure lodgement, whence expeditions could be sent to every part of our coast. But it is to be observed that no part of Narraganset bay is necessary for the safety of a hostile fleet watching that part of our coast. Gardiner's bay in that vicinity is a most safe and convenient station, which was occupied by the British during almost the whole of the late war, and it is pretty clear that it cannot be defended by any stationary fortifications that can be constructed. If it can by floating batteries, so may Narraganset bay, and the enemy thus prevented from occupying the latter also without these extensive arrangements requiring, after Fort Adams shall have been completed at an expense of one million three hundred and twelve thousand dollars, four other forts and a sea-wall to be constructed, and eleven hundred and fifty-seven thousand dollars to be expended.

I do not think that the most prudent forecast ought to lead to the apprehension that a force competent to seize such a position would be sent to our country, or that any circumstances could enable them to maintain it in the face of the vigorous efforts that would be made to recover it, and in the midst of a country abounding in all the means to give effect to their exertions. But perhaps the most striking objection to the completion of this extensive plan is that under no possible circumstance can it effect the desired object. That object, if I understand it, is not the mere exclusion of an enemy from Rhode Island, but it is to prevent him from taking possession of a safe and convenient position, whence he could detach his forces by means of his naval superiority to any other part of the coast which would thus be exposed to his depredations.

The value of Gardiner's bay as a place of naval rendezvous I have already described. Block island, in its neighborhood, could be occupied by troops desiring only a lodgement, and so could Nantucket island and Martha's Vineyard, and these are only a few hours' sail from Narraganset bay. Buzzard's bay is

also a safe and capacious harbor which cannot be defended, and Martha's Vineyard sound affords commodious places of anchorage. A fleet riding in these moorings would have under its command all the islands in this group, and could secure its communications with its land forces encamped upon them, which would thus be enabled, at any proper time, to throw itself upon other parts of the coast. It may be doubted, if there were not a cannon mounted upon Rhode Island, whether an enemy acquainted with the topography and resources of this country would select it as his place of arms, if I may so term it, when there are islands in the neighborhood which would answer this purpose nearly as well, and where he would be in perfect safety as long as he could maintain his naval ascendancy, and longer than that he could not, under any circumstances, occupy Rhode Island. And if I rightly appreciate the strength and spirit of that part of the country, his tenure, in any event, would be short and difficult. I do not mean to convey the idea that Rhode Island should not be defended. I think it should be; but I do not think that precautions should be taken against events which are not likely to happen. As there is no naval establishment here, it is not necessary to enter into any question concerning defensive arrangements exclusively connected with that object.

It will be perceived also that it is proposed to fortify Mount Desert island, on the coast of Maine, and that the expense is estimated at five hundred thousand dollars, and the number of the garrison competent to maintain it at one thousand men. This proposition is founded, not on the value of this harbor to us, for it possesses little, and is, in effect, unoccupied, but on account of its importance to the enemy. Were there no other secure position they could occupy in that quarter, and which could not be defended, I should think the views submitted upon this branch of the subject entitled to great weight. But there are many indentations upon this coast, affording safe anchorage, and which are either not capable of being defended, or from their great number would involve an enormous expense, which no sound views of the subject could justify. An enemy, therefore, cannot be deprived of the means of stationing himself upon this coast. And before this expenditure at Mount Desert island is encountered, it ought to be clearly ascertained that the difference, in its practical advantages to an enemy, between the occupation of Mount Desert island and that of some of the other roadsteads in this quarter, incapable of defence, would be sufficiently great to warrant this measure. My present impression is that it would not.

And on the subject of roadsteads generally, with a few exceptions, depending on their local positions, I am inclined to the opinion that any attempt to fortify them would be injudicious. I do not speak of harbors and inlets which are occupied by cities and towns, but of mere anchorage grounds, deriving their value from the shelter they afford. If all could be defended, and an enemy excluded from them, the advantages would justify any reasonable expenditure. But this is impracticable, and I doubt whether the circumstances, in which most of them differ, give such marked superiority to those we can defend over those we cannot, as to lead to any attempt to fortify them, in the first instance, and to maintain garrisons in them during a war.

I have adverted to these particular cases in order to present my views more distinctly than I could do by mere general observations. Certainly not from the remotest design of criticising the reports and the labors of the able professional men to whom the subject has been referred, nor of pursuing the investigation into any further detail.

I consider the duty of the government to afford adequate protection to the sea-coast a subject of paramount obligation; and I believe we are called upon by every consideration of policy to push the necessary arrangements as rapidly as the circumstances of the country and the proper execution of the work will allow. I think every town large enough to tempt the cupidity of an enemy should be defended by works, fixed or floating, suited to its local position, and

sufficiently extensive to resist such attempts as would probably be made against it. There will, of course, after laying down such a general rule, be much latitude of discretion in its application. Upon this branch of the subject I would give to the opinion of the engineer officers great and almost controlling weight, after the proper limitations are established. These relate principally to the magnitude of the works, and if I am correct in the views I have taken of this branch of the subject, a change in the system proposed is necessary. Works should not be projected upon the presumption that they are to be exposed to and must be capable of resisting the attacks of an European army, with its battering train, and all its preparations for a regular siege. Neither our relative circumstances, nor those of any nation with which we shall probably be brought into conflict, can justify us in such an anticipation. All the defences should be projected upon a scale proportioned to the importance of the place, and should be calculated to resist any naval attack, and any sudden assault that a body of land troops might make upon them. But further than this it appears to me we ought not to go. The results at Stonington, at Mobile Point, at Fort Jackson, and at Baltimore, during the late war, show that formidable armaments may be successfully resisted with apparently inferior means. These, indeed, do not furnish examples to be followed as to the scale of our preparations, but they show what stationary batteries have done in our country against ships-of-war.

It is to be observed that the great object of our fortifications is to exclude a naval force from our harbors. This end they ought fully to answer, and in this problem there are two conditions to be fulfilled :

1. That they be able to resist any naval batteries that will probably be placed against them ; and
2. That they be also able to resist any *coup de main* or escalade which might be attempted by land.

An open battery, under many circumstances, might fulfil the first condition but not the second, and therefore these works should be closed and regularly constructed. It is not to be denied that the proper boundary between the magnitude and nature of the works necessary to attain the objects indicated, and those required to resist successfully a formal investment, will sometimes become a matter of doubt ; nor that circumstances may not be stated which might induce an enemy to open his trenches against one of these works, because its capacity for defence was not greater. That capacity, however, with relation to the question under consideration, has a far more intimate connexion with the magnitude than with the form of the works, because, if unnecessarily large, they entail upon the country a serious evil in the increased means for their defence, independently of the additional expense in their construction. It is principally, therefore, in the latter point of view that I have presented the doubts which I have expressed upon this point.

Among the hypothetical cases heretofore stated by the board of engineers was one which supposed that an army of twenty thousand men might be assembled upon one of the flanks of our coast, and that we ought to be prepared, at every important point, to resist the first shock of such a force. I have already glanced at the reasons, geographical, political, financial, and prudential, which, in my opinion, leave little room to expect that any enemy will, hereafter, project an enterprise of this magnitude, so certain in its expense, so uncertain in its result, and so disproportioned to any object which could probably be attained. And the suggestion which was made by the board, of defending the city of Washington by works erected near the mouth of the Patuxent, proceeds upon similar views. Our navy, our floating batteries, our means of communication and concentration, seem to me far better adapted to the defence of this city than forts at the distance of nearly fifty miles, whose principal effect, if an enemy were resolved upon the enterprise, would be to compel him to make a *detour* in his expedition, or which would send him to some part of the coast of

the bay between Patuxent and Annapolis, or into the Potomac, where his descent would be uninterrupted, and where he would be but little, if any, further from Washington than at the head of navigation of the Patuxent.

Even during the last war, when the navy of Great Britain rode triumphant upon the ocean, but one serious attempt was made to force an entrance into a fortified harbor, and that was unsuccessful. The greatest possible force which can be brought, and the greatest possible resistance which can be applied, do not constitute a practical rule for the construction of our fixed defences. Moral considerations must also have weight. Probabilities must be examined. The power of the permanent batteries is one of the elements of security. So are the dangers of dispersion, and shipwreck, and all the hazards of a distant expedition, as these must operate on the councils of any country meditating such an enterprise, the efforts of our navy, the co-operation of the floating defences, and the troops which may be ready to meet the enemy upon his debarkation or march.

In submitting these reflections, I am desirous only of discharging the duty confided to me. I am gratified that the whole subject will be presented for the consideration of Congress in a systematic form, and that the principles of its future prosecution can now be settled. The plan originally devised was recommended upon great consideration, and, at the time its initiatory measures were adopted, was calculated for the state of the country. We had just come out of a severe struggle, and had felt the want of adequate preparation, and above all, we had seen and deplored the circumstances which gave the enemy undisturbed possession of the Chesapeake, and its disastrous consequences. And it was to be expected that our arrangements for future defence should be planned upon the then existing state of things. I imagine there were few who did not concur in this sentiment. Because, therefore, some of our works, from the wonderful advancement of the country in all the elements of power, and from the development of new means of annoyance, are larger than are found necessary at this time, still this does not bring into question the wisdom of the original measure. And, as it is, they are most valuable and useful; but the experience we have acquired may be profitably employed in re-examining the plans proposed for the prosecution of the system, and in inquiring whether the change which has taken place in the condition of the country will not justify a corresponding change in the nature of our preparations, and whether we may not depend more upon floating, and less upon stationary defences.

During the period which has intervened since the last war we have nearly doubled in our population, and all our other resources have probably increased in a still greater ratio. Certainly, some of the facilities and means of defence are augmented beyond any rational expectations. The power of transporting troops and munitions of war has already opened new views upon this subject, and such is the progress and probable extent of the new system of intercommunication that the time will soon come when almost any amount of physical force may be thrown upon any point threatened by an enemy. Nashville may succor New Orleans in sixty hours; Cincinnati may aid Charleston in about the same time; Pittsburg will require but twenty-four hours to relieve Baltimore, and troops from that city and from Boston may leave each place in the morning, and meet in New York in the evening. This wonderful capacity for movement increases, in effect, some of the most important elements of national power. It neutralizes one of the great advantages of an assailing force, choosing its point of attack, and possessing the necessary means of reaching it. Detachments liable, under former circumstances, to be cut off in detail, may now be concentrated without delay, and most of the garrisons upon the seaboard may be brought together, and, after accomplishing the object of their concentration, be returned to their stations in time to repel any attack meditated against them.

The improvements which are making in the application of steam have fur-

nished another most important agent in the work of national protection. There can be but little doubt that floating batteries, propelled by this agent, will be among the most efficient means of coast defence. In our large estuaries, such as the bays of New York, of the Delaware, and of the Chesapeake, they will be found indispensable; and one of the most important advantages to be anticipated from the works at Old Point Comfort is the security they will afford to the floating batteries co-operating with them, and which will find a secure shelter in Hampton roads. A hostile fleet about to enter the Chesapeake would certainly calculate the means of annoyance to which it would be exposed by these formidable vessels. During a calm they would take a distant position, insuring their own safety, while, with their heavy guns, they might cripple and destroy the enemy; and their power of motion would enable them, under almost all circumstances, to approach the fleet, and to retire, when necessary, where they could not be pursued. I think it doubtful whether a squadron would anchor in the Chesapeake, or proceed up it, if a competent number of these batteries were maintained and placed in proper positions.

These considerations may well lead us to doubt the necessity of such extensive permanent works, while their non-existence at the time the system was adopted justifies the views which then prevailed; and without advancing any rash conjecture, we may anticipate such improvements in this branch of the public service as will make it the most efficient means of coast defence. These vessels, properly constructed, may become floating forts almost equal to permanent fortifications in their power of annoyance and defence, and in other advantages far superior to them. Being transferable defences, they can be united upon any point, and a few of them be thus enabled to protect various places. We have been brought by circumstances to a more rigid investigation of our means of defence, and to a re-examination of the whole subject. After an interval of twenty years of tranquillity, public sentiment and the attention of the government were, by unexpected circumstances, more forcibly directed to this matter. The result cannot fail to be advantageous. The whole subject can be now re-examined by Congress, with all the benefits which much experience has brought, and with the advantage of adapting a system to the advanced state of the country.

There are two bills for fortifications now pending before Congress. One before the House, amounting to \$2,180,000, and intended to prosecute works actually already commenced. The estimates for this bill may therefore be considered necessary in themselves, under any view of the general subject, and not unreasonable in amount for the present year, because they include the operations of two years. The incidental expenses, however, may be safely reduced one-half, as it will not be necessary to make such extensive repairs as were considered requisite when the estimates were prepared.

The bill pending before the Senate contains appropriations for nineteen new works, and for the sum of \$600,000 to be expended for steam batteries. The estimates on which this bill was founded were prepared at a time when prudence required that arrangements should be made for a different state of things from that which now exists. An examination of the general system of defence was not then expedient; and the means of protecting the most exposed points, agreeably to information previously collected, were asked of Congress. It was no time then to stop, and instead of prosecuting established plans vigorously, to lose the period of action by surveys, examinations, and discussions. But the opportunity is now afforded, without danger to the public interest, of applying the principles suggested to the works under consideration.

It cannot be doubted but that fortifications at the following places enumerated in this bill will be necessary:

At Penobscot bay, for the protection of Bangor, &c.

At Kennebec river.

At Portland.
 At Portsmouth.
 At Salem.
 At New Bedford.
 At New London.
 Upon Staten Island.
 At Sollers's Flats.
 A redoubt on Federal Point.
 For the Barrancas.
 For Fort St. Philip.

These proposed works all command the approach to places sufficiently important to justify their construction under any circumstances that will probably exist. I think, therefore, that the public interest would be promoted by the passage of the necessary appropriations for them. As soon as these are made, such of these positions as may appear to require it can be examined, and the form and extent of the works adapted to existing circumstances, if any change be desirable. The construction of those not needing examination can commence immediately, and that of the others as soon as the plans are determined upon. By this proceeding, therefore, a season may be saved in the operations.

The other works contained in this bill are:

For Provincetown.—And this proposition may be safely submitted to another inquiry, as the practicability of excluding an enemy from any shelter in Massachusetts bay, a matter of deep interest, and as a work at Provincetown, are closely connected.

For Rhode Island, Narraganset bay.—This work may await the result of the views that may be eventually taken on the subject of fortifying this bay.

For a work at the Delaware outlet of the Chesapeake and Delaware canal.—This may be postponed without injury till next season; and in the mean time a project for the floating defences of the Delaware considered, and perhaps the size of the proposed work reduced.

For a work at the Breakwater.—Until the effect of the deposits which are going on in this important artificial harbor are fully ascertained, I consider it injudicious to erect a permanent work for its defence. Another year will, perhaps, settle the question, and if the result is favorable, an adequate fortification should be constructed here without delay.

For a fort on the Patuxent river, and a fort at Cedar Point.—Both of these works are liable to some of the objections stated, and I think they had better be postponed for more mature consideration.

For fortifications at the mouth of the St. Mary's, Georgia.—This proposition may also be safely submitted to examination.

The estimate for steam batteries may be reduced to \$100,000. That sum can be profitably employed.

If these appropriations are early made, most if not all of these works can be put in operation this season, and the money usefully applied, as fast as their progress will justify. And I think the measure would be expedient. But it is to be remembered that the power of the department to push them, during the present year, will depend on the reorganization of the corps of engineers. If that corps is not increased, it will be unnecessary to make the appropriations in the bill before the Senate, as the objects contained in the other bill will be sufficient to occupy the time of the present officers of the corps.

Should it be deemed proper to re-examine the subject of the proposed fortifications generally, I would then recommend that an appropriation of \$30,000 be made to defray the expenses of a board, including surveyors, &c.

My reflections upon the whole subject lead to the following practical suggestions on the great subject of the measures for the defence of the country:

1. An augmentation of the navy, upon the principles before stated.
2. The adoption of an efficient plan for the organization of the militia.

Having already, in two of the annual reports I have had the honor to make to you, expressed my sentiments upon this subject, I have nothing new to lay before you, either with relation to its general importance, or to the necessary practical details. I consider it one of the most momentous topics that can engage the attention of Congress; and the day that sees a plan of organization adopted, suited to the habits of our people and the nature of our institutions, and fitted to bring into action the physical strength of the country, with a competent knowledge of their duty, and just ideas of discipline and subordination, will see us the strongest nation, for the purposes of self-defence, on the face of the globe. Certainly such an object is worthy the attention of the legislature.

3. The cultivation of military science, that we may keep pace with the improvements which are made in Europe, and not be compelled to enter into a contest with an adversary whose superior knowledge would give him pre-eminent advantages. War is an advancing science. Many an original genius and many an acute intellect are at all times at work upon it; and the European communities have such a relation to one another that the profession of arms is peculiarly encouraged, and every effort made to place their military establishments, not at the highest numerical point, but in the best condition for efficient service, both with respect to its *morale* and *materiel*. It is not by the mere reading of professional authors that the necessary instruction in this branch of knowledge can be obtained; there must be study and practice; a union of principles and details, which can best be obtained by a course of education directed to this object. This, I think, is one of the greatest advantages of the Military Academy. It cannot have escaped the recollection of those who were upon the theatre of action at the commencement of the last war, that the first year was almost spent in a series of disasters, which, however, brought their advantages. We were comparatively ignorant of the state of military science, and we did not fully recover our true position till we had received many severe lessons: at what an expense of life and treasure need not be stated.

4. The skeleton of a regular establishment, to which any necessary additions may be made, securing, at the same time, economy, with a due power of expansion, and the means of meeting a war with all the benefit of a regularly organized force. This object is attained by our present army.

5. The preparation and proper distribution of all the munitions of war, agreeably to the views hereinafter submitted.

6. I think all the defensive works now in the process of construction should be finished, agreeably to the plans upon which they have been projected.

7. All the harbors and inlets upon the coast, where there are cities or towns whose situation and importance create just apprehension of attack, and particularly where we have public naval establishments, should be defended by works proportioned to any exigency that may probably arise.

Having already presented my general views upon this branch of the inquiry. I need not repeat the practical limitations which I propose for adoption. But before any expenditure is incurred for new works, I think an examination should be made, in every case, in order to apply these principles to the proposed plan of operations, and thus reduce the expense of construction where this can properly be done, and, also, the eventual expense of maintaining garrisons required to defend works disproportioned to the objects sought to be attained. I would organize a board for this object, with special instructions for its government.

8. Provision should be made for the necessary experiments, to test the superiority of the various plans that may be offered for the construction and use of steam batteries; I mean batteries to be employed as accessories in the defence of the harbors and inlets, and in aid of the permanent fortifications.

The progressive improvement in the application of the power of steam renders it inexpedient, at any given time, to make extensive arrangements, connected with this class of works, with a view to their future employment. The improvement of to-day may be superseded by the experience of to-morrow; and modes of application may be discovered before any exigency arises rendering a resort to these defences necessary, which may introduce an entire revolution into this department of art and industry. Still, however, experiments should be made, and a small number of these vessels constructed. Their proper draught of water, their form and equipment, the situation and security of their machinery, the number, calibre, and management of their guns, and the best form of the engines to be used, are questions requiring much consideration, and which can only be determined by experience. And there can be little doubt that suitable rewards would soon put in operation the inventive faculties of some of our countrymen, and lead to the tender of plans practically suited to the circumstances. As we acquire confidence by our experience, arrangements could be made for collecting and preparing the indestructible materials for the construction and equipment of these vessels, as far as such a measure may not interfere with any probable change, which at the time may be anticipated in the application of the power of steam.

9. I recommend a reconsideration of the project for fortifying the roadsteads or open anchorage grounds, and its better adaptation to the probable future circumstances of the country.

And I would suggest that the works which are determined on be pushed with all reasonable vigor, that our whole coast may be placed beyond the reach of injury or insult as soon as a just regard to circumstances will permit. No objections can arise to this procedure on the ground of expense, because, whatever system may be approved by the legislature, nothing will be gained by delaying its completion beyond the time necessary to the proper execution of the work. In fact, the cost will be greater the longer we are employed in it, not only for obvious reasons, arising out of general superintendence and other contingencies, but because accidents are liable to happen to unfinished works, and the business upon them is deranged by the winter, when they must be properly secured; and the season for resuming labor always finds some preparations necessary, which would not have been required had no interruption happened.

But the political considerations which urge forward this great object are entitled to much more weight. When once completed we should feel secure. There is probably not a man in the country who did not look with some solicitude during the past season at our comparatively defenceless condition, when the issue of our discussions with France was uncertain, and who did not regret that our preparations, during the long interval of peace we had enjoyed, had not kept pace with our growth and importance. We have now this lesson to add to our other experience. Adequate security is not only due from the government to the country, and the conviction of it is not only satisfactory, but the knowledge of its existence cannot fail to produce an influence upon other nations, as well in the advent of war itself, as in the mode of conducting it. If we are prepared to attack and resist, the chances of being compelled to embark in hostilities will be diminished much in proportion to our preparation. An unprotected commerce, a defenceless coast, and a military marine wholly inadequate to the wants of our service, would indeed hold out strong inducements to other nations to convert trifling prettexts into serious causes of quarrel.

There are two suggestions connected with the prosecution of our works which I venture to make:

First. That the corps of engineers should be increased. The reasons for this measure have been heretofore submitted, and the proposition has been recommended by you to Congress. I will merely add, upon the present occasion, that the officers of this corps are not sufficiently numerous for the performance of the

duties committed to them; and that if an augmentation does not take place, the public interest will suffer in a degree far beyond the value of any pecuniary consideration connected with this increase. And,

Secondly. I think that when the plan of a work has been approved by Congress, and its construction authorized, the whole appropriation should be made at once, to be drawn from the treasury in annual instalments, to be fixed by the law. This mode of appropriation would remedy much of the inconvenience which has been felt for years in this branch of the public service. The uncertainty respecting the appropriations annually deranges the business, and the delay which biennially takes place in the passage of the necessary law reduces the alternate season of operations to a comparatively short period. An exact inquiry into the effect which the present system of making the appropriations has had upon the expense of the works would probably exhibit an amount far greater than is generally anticipated.

The report from the ordnance department shows the quantity and nature of the munitions of war, estimated to be eventually necessary, and their probable cost, including new establishments necessary for their fabrication and preservation. The conjectural amount is \$29,955,537.

Believing it is not expedient, at present, to make any preparations upon a scale of this magnitude, I have deemed it proper to accompany this report with a brief statement of my own views, where I depart from the suggestions that are presented in this document.

As our fortifications are constructed, their armaments should be provided; and the amount in *depot* should at all times exceed the anticipated demand, to meet the casualties of the service. We have now on hand 1,818 new cannon for sea-coast defence; and about 1,000 others, most of which are either useless or of doubtful character. The works actually finished, or so far completed as to admit of a part of their armament being placed in them, require about 2,000 guns. They are calculated ultimately to mount about 600 more. Others in the process of construction will require about 1,400. So far we have certain data for our estimates; unless, indeed, which I am inclined to believe, it should not be found necessary ever to provide the full complement destined for the largest of these works. Beyond this, the subject is conjectural. And the quantity needed must depend upon the principles that may be adopted in the further progress of the system of fortifications. There are four private foundries at which the public cannon are cast. These, if their whole attention were devoted to the object, could manufacture from 1,200 to 1,500 annually. As to carriages and other supplies, the amount that could be procured within a reasonable period is almost indefinite. Iron carriages are now made for all the casemate batteries, and they have not only the advantage of indestructibility from the atmosphere, but, requiring no seasoned materials, they may be supplied by the foundries through the country to almost any extent.

We have two armories for the manufacture of small arms, and there are seven private establishments which fabricate arms for the government. All these supplies are of the best description, and are submitted to a rigid inspection, which prevents imposition. The armories can at present turn out about 27,000 arms annually, and probably 11,000 or 12,000 could be made at existing private establishments. Should any exigency require larger supplies, the quantity can be much increased. We have now on hand about 700,000 small arms, and there have been issued to the States about 180,000 muskets, 25,000 rifles, 30,000 pistols, and 378 field cannon and carriages, under the act for arming the militia. If 100,000 of these muskets and rifles are preserved, there are in the country 800,000 of those species of arms belonging to the general or State governments.

What may be considered a proper supply is a question admitting much difference of opinion. It will be seen that the ordnance department fixes the

amount at about 600,000, in addition to what are now on hand, and including the number necessary to arm the militia. We had, at the commencement of the last war, 240,000 muskets, and during its progress 60,000 more were made and purchased. At its termination there were but 20,000 at the various arsenals. The residue were in the hands of the troops, or had been lost in the service. This consumption was greater, I think, than was necessary, or than would probably again take place. A plan of accountability has been introduced, by which the men are charged with the arms they receive, and if these are improperly lost or injured, the value is deducted from their pay. The paymasters cannot settle with them till this matter is adjusted.

The stock of small arms in Great Britain, in depot, in 1817, was ..	818,282
In the public service	200,974
Total.....	1,019,256

The number in depot in France, in 1811, was 60,000, not including the great number in service.

My own impression, is that 1,000,000 small arms may be considered a competent supply for the United States; and if so, a large deduction may be made from the estimate of the ordnance department under this head of expenditure. Although the component materials of these arms are almost imperishable, still it is not expedient to keep a stock unnecessarily large on hand; because there is not only some risk and expense in their preservation, but because, like every other article manufactured by man, they are no doubt susceptible of great improvement. And it may be that those now made may be superseded by an improved model, which, once introduced, must be adopted, at whatever expense or inconvenience, by all nations. And the ingenious invention lately exhibited in this city, by which a series of balls, in separate charges, are brought by a rotary motion to a common place of discharge, suggests the possibility of a revolution in the form of our fire-arms.

On the subject of depots for these arms, I accord with the general suggestions made by the colonel of ordnance. I think the number should be increased, and arms placed in every part of the country, ready to be used as circumstances may require.

It will be observed that, in the estimate I have made, I confine myself to the armament for the public service, connected with the actual defence of the country, whether to be used by the army or militia in time of war, but I do not extend my views to a supply for arming the militia, in order to discipline them in time of peace. The extent of this policy is a question not necessary in the consideration of the subject before me.

As the arms in *depot* approach whatever number may be assumed as the proper maximum, the necessity for additional armories becomes less. When our stock is once completed, the present armories, without any aid from the private establishments, will be able to supply the annual consumption. I think, therefore, that two additional armories, as suggested by the ordnance department, are not wanted. And, indeed, although there are considerations attending the transportation of the rude and the manufactured article, and other circumstances which would justify the establishment of a new armory upon the western waters at present, yet if the measure is not carried into effect soon its importance will annually diminish.

But a national foundry for cannon, both for the military and naval service, and perhaps two in different sections of the country, should be erected without delay. The best interests of the public require it. But I have nothing to add to the suggestions made upon this subject in my last annual report.

As to field artillery, the extent to which it shall be provided must depend

upon the views of the legislature concerning the expediency of issuing it to the militia. If a more efficient organization does not take place I think the expenditure on this account may well be saved to the public treasury. I consider all attempts to improve the condition of the militia upon the present plan as so nearly useless that the whole system has become a burden upon the public without any corresponding advantage. The principal benefit which results from the existing state of things is the power to call into service such portions of the population as may be wanted. But this may be attained by a simple classification without the cumbrous machinery which at present creates expense and trouble, and which, while it promises little, performs still less.

Very respectfully, sir, I have the honor to be, &c.,

LEWIS CASS.

The PRESIDENT of the United States.

ENGINEER DEPARTMENT,
Washington, March 30, 1836.

SIR: In compliance with your instructions, I have the honor to submit herewith the copy of a report prepared in fulfilment of the requirement of the first inquiry contained in the resolution of the Senate of the 18th of February last. The views presented by Colonel Totten on the subject are full and explicit, and are consonant with the principles heretofore advocated by this department. The report is therefore respectfully submitted without any further comments.

Very respectfully, sir, your most obedient servant,

G. GRATIOT,
Chief Engineer.

Hon. LEWIS CASS, *Secretary of War.*

WASHINGTON, *March 29, 1836.*

SIR: In compliance with your request, I have the honor to hand in some remarks on the fortification of the frontier of the United States.

And am, sir, very respectfully, your most obedient,

JOS. G. TOTTEN,
Lt. Col. Eng. Br. vet Colonel.

Brig. Gen. CH. GRATIOT,
Chief Engineer, Washington.

In presenting a summary statement of the general system of defence of the country by fortifications, as proposed and in part executed, it is proper to refer for much information as to localities, as to particular projects, and for statements and arguments somewhat elaborate, to communications made at different times by the board of engineers for fortifications.

These communications, of a nature forbidding too great publicity, are to be found in the records of the War Department in the shape of reports of the board of engineers of 1817, 1819, 1820, 1821, 1822, 1823, 1824, and 1825. Reference may also be made with advantage to the revised report of the board of engineers presented in 1826, and published as document No. 153 of the state papers of the first session of the nineteenth Congress. The report of 1826, just referred to, was drawn up by the undersigned, and was the work of

much research and of mature deliberation; and in giving it now a careful perusal, he thinks that the information now called for by the Senate cannot be better afforded, at least by him, than by again presenting that report, occasionally condensing, curtailing, or omitting portions of the argument and certain descriptions, and adding such new facts as may have been developed by further research, or made more prominent and interesting by the progress of improvement in the country.

The elements going to make up the general system of maritime defence are a navy, fortifications, interior communications by land and water, and a regular army, and well organized militia.

The navy must be provided with suitable establishments for construction and repair; stations, harbors of rendezvous, and ports of refuge. All these must be covered by fortifications having garrisons of regular troops and militia, and being supplied with men and materials through the lines of interior communications. Not being required to remain in the harbors for their defence, the navy, pre-eminent as an offensive arm, will be prepared to transfer the war to distant oceans and to the shores of the enemy, and to act the great part which its early achievements have foretold, and to which its high destiny will lead.

Fortifications should, 1st, close all important harbors against an enemy, and secure them to our military and commercial marine;

2d. Should deprive an enemy of all strong positions where, protected by naval superiority, he might maintain himself during the war, keeping the whole frontier in constant alarm;

3d. Must cover the great naval establishments from attack;

4th. Must protect the great cities;

5th. Must prevent, as far as possible, the great avenues of interior navigation from being blockaded at their entrances to the ocean;

6th. Must cover the coastwise and interior navigation, by closing the harbors and the several inlets which intersect the lines of interior communication, thereby further aiding the navy in protecting the navigation of the country; and

7th. Must shelter the smaller towns along the coast, and also all their commercial and manufacturing establishments which are of a nature to invite the enterprise or cupidity of an enemy.

Interior communications will conduct, with certainty, the necessary supplies of all sorts to the stations, harbors of rendezvous and refuge, and the establishments of construction and repair for the use both of the fortifications and of the navy; will greatly facilitate and expedite the concentration of military force, and the transfer of troops from one point to another; will insure to these troops supplies of every description, and will preserve, unimpaired, the interchange of domestic commerce, even during periods of the most active external warfare.

The army and militia, together with the *personnel* of the marine, constitute the vital principle of the system.

It is important to notice the reciprocal relation of these elements of national defence; one element is scarcely more dependent on another, than the whole system is on each one. Withdraw the navy, and the defence becomes merely passive; we expose ourselves the more to suffer the evils of war, at the time that we deprive ourselves of all means of inflicting them. Withdraw *interior communication*, and the navy will often be greatly embarrassed for want of supplies, while the fortifications will be unable to offer full resistance for want of timely re-enforcements. Withdraw *fortifications*, and the interior communications are broken up, and the navy is left entirely without collateral aid.

That element in the system of defence, which is now to be attended to, is the *fortification* of the frontier. It may not be unprofitable here to go somewhat more into detail, as to the relation of this with the other members of the system;

the rather, as the reasons for some conclusions hereafter to be announced will be the more apparent.

In considering the relation of fortifications, and of the navy, to the defence of the country, it will appear that the functions of the latter are not less appropriately offensive than those of the former are necessarily defensive; the latter loses much of its efficiency as a member of the system the moment it becomes passive, and should in no case (referring now to the navy proper) be relied on as a substitute for fortifications.

The position, it is thought, may be easily established.

If our navy be inferior to that of the enemy, it can offer, of course, without collateral aids, but a feeble resistance, single ships being assailed by fleets or squadrons. Having numerous points along our extended frontier to protect, all of which must be simultaneously guarded, because ignorant of the selected points of attack, the separate squadrons or vessels may be captured in detail, although the naval force be, in the aggregate, equal or superior to the enemy's. Should we in such a case venture to concentrate, under the idea that the particular object of the adversary was foreseen, he could not fail to push his forces upon the places thus left without protection. This mode of defence is liable to the further objection of being exposed to fatal disasters, independent of assaults of an enemy, and of leaving the issue of conflicts to be determined sometimes by accident, in spite of all the efforts of courage and skill. If it were attempted to improve upon this mode, by combining with it temporary batteries and field-works, it would be found that, besides being weak and inadequate from their nature, the most suitable positions for these works must often be neglected, under the unavoidable condition of security to the ships themselves. If the ships take no part in the contest, the defence is of course relinquished to the temporary batteries; if the ships unite in the defence, the batteries must be at hand to sustain them, or the ships must strike to the superior adversary. Placing these batteries in better position, and giving them greater strength, is at once resorting to defence by fortifications; and the resort will be the more effectual, as the positions are better chosen, and the works better adapted to the circumstances.

On the great comparative expense of such a mode of defence, which will be quite apparent after a little reflection, only one or two very brief remarks will be made, viz: The expense incurred by the nation defending itself on this plan will, from the first, greatly exceed that incurred by the attacking party; because, to resist a single fleet threatening the coast, there must be provided as many equal fleets as there are important objects inviting the attack of the enemy, and even with this costly preparation, all lesser objects are thrown upon his forbearance. These defences, moreover, being perishable in their nature, will need frequent removal and repair.

On the other hand, the proper fortification of the coast, preventing the possibility of a blockade so strict as not to afford frequent opportunities for our navy to leave the harbors, our ships, no longer needed for passive defence, will move out upon their proper theatre of action, though inferior to the enemy, with confidence; knowing that, whether victorious, whether suffering from the violence of tempests, or whether endangered by the vicinity or the pursuit of a superior force, they can strike the extended coast of their country (avoiding the more important outlets, where alone a considerable blockading force may be supposed to lie) at numerous points where shelter and relief await them; hovering around the flanks and in the rear of blockading fleets, and recapturing their prizes: falling upon portions of these fleets, separated for minor objects, or by stress of weather; watching the movements of convoys, in order to pick up straggling vessels; breaking up or restraining the enemy's commerce in distant seas; meeting by concert at remote points and falling in mass upon his smaller squadrons, or upon his colonial possessions, and even levying contributions in his un-

protected ports; blockading for a time the narrow seas, and harassing the coasting commerce of the enemy's own shores. These are objects which our own history shows may be accomplished, although contending, by means of a navy as to numbers apparently insignificant, against a marine whose force and efficiency have never been paralleled. Our own history shows, besides, that the reason why our infant navy did not accomplish still more, was that the enemy, possessing himself of unfortified harbors, was enabled to enforce a blockade so strict as to confine a portion of it within our waters. That this portion, however, indeed, that all was not captured, can be attributed only to respect—so misplaced that it could be the result of ignorance only—for the then existing fortifications; a result amply compensating the nation for the cost of those imperfect works. It would be difficult, nay, impossible, to estimate the full value of the results following the career of our navy, when it shall have attained its state of manhood, under the favorable conditions heretofore indicated. The blockade of many and distant parts of our coast will then be impossible, or, rather, can then be effected only at enormous cost, and under the risk of the several squadrons being successively captured or dispersed; the commerce of our adversary must be nearly withdrawn from the ocean, or it must be convoyed, not by a few vessels, but by powerful fleets. In fine, the war, instead of resulting in the pillage and conflagration of our cities and towns, in the destruction of our scattered and embayed navy, and of the expensive establishments pertaining to it, in the interruption of all commercial intercourse between the several portions of the maritime frontier, in the frequent harassing, and expensive assemblage of militia forces, thereby greatly lessening the products of industry, and infusing among this most valuable portion of our population the fatal diseases and the demoralizing habits of a camp life; instead of these and innumerable other evils attendant upon a conflict along and within our borders, we should find the war and all its more serious evils shut out from our territory by our fortresses, and transferred by our navy to the bosom of the ocean, or even to the country of the enemy, should he, relying on a different system, have neglected to defend the avenues by which he is assailable.

Our wars, thus becoming maritime, will be less costly in men and money, and at the same time more in unison with our institutions—forging no weapon for defence capable of being turned, under other circumstances, against the life of the State; and keeping our domestic industry and relations, under our internal financial resources, beyond the reach of assault from without.

It is an incontestible principle in military science, and one fully illustrated by military history, that the worst mode of waging war, although strictly a defensive one in its origin and its object, is to permit its field of action to lie within our own borders; and that the best mode is that which longest sustains an offensive attitude. In our own case, war can be excluded from our territory only by fortifications; and we can assume the offensive, with the greatest portion of mankind, only through our navy. The construction of the former secures the means of creating, equipping, and repairing the latter, and leaves it unencumbered with duties which it imperfectly performs, to the full exercise of its great and appropriate functions. In accordance with these principles, what, in general terms, is the extent to which the government may be called on to prepare itself in fortifying the coast and in building up the navy?

It is not in human forecast to decide upon the station of the latter a generation hence. Political events may force the nation to place herself more nearly on a level with some of the greatest of maritime powers, or the prevalence of peaceful relations may restrict the growth of the navy to that demanded by the increase, rapid and extensive, of our commercial interests. But whatever may be the amount of enlargement of the naval force, whether greater or less; or whatever the mode, whether progressive and regular, or by sudden expansion, its increase will involve no corresponding extension in the number or strength

of the fortifications, because these must be adequate to their object of themselves, and must consequently be, with some exceptions, as numerous and as strong while the navy is small, as when the navy shall have attained its maximum. A considerable enlargement of the naval force might build up new naval establishments, thereby, in raising the importance of certain positions, calling for stronger defences.

The growth of the country in wealth and numbers will convert certain places, now presenting no inducements to the enterprise of an enemy, into rich and populous cities. But, with the exception of these cases, and such as these, it may be assumed that a good system of fortifications applied now to the maritime frontier will be equal to its object in all future times.

Conceiving it unnecessary to enlarge further on this part of the subject, a few remarks will be offered on the correlative influence of *fortifications* and *interior communications*.

The most important of these communications, in reference to a system of defence, are, first, such as serve to sustain, in all its activity, that portion of domestic commerce which, without their aid, would be interrupted by a state of war; and second, such as serve, besides their great original purposes, to conduct from the interior to the theatre of war necessary supplies and timely relief. The first, which are among the most important national concerns of this nature, lie parallel to, and not far from, the coast; the second, which, when they cross the great natural partition-wall between the east and the west, are equally important, lie more remote from the coast, and sometimes nearly or quite parallel to it, but generally fall, nearly at right angles to the line of the seaboard, into the great estuaries, where, in some cases, their products are arrested, or whence, in others, they flow or mingle with those of the first. To fulfil the object of the first-mentioned lines of communication, it is obviously necessary to prevent an enemy from reaching them through any of the numerous inlets from the sea which they traverse, including, of course, the great inlets wherein these unite with the communications coming from the interior. The security of the coast-wise line, therefore, involves the security of the other, and is, in a great measure, indispensable to it. From such considerations as have been already presented, it is inferred that, for the security here required, we must, as in the case of cities, harbors, naval establishments, &c., look to fortifications. But it fortunately happens, as will appear in the sequel, that wherever both objects exist, the works necessary for the one may often, if not always, be made to accomplish both. In reference to a system of defence for the protection of these lines of communication, it must be observed that, from the facility with which they may be broken up, and the serious evils consequent thereon, they offer to the enemy great inducements to enterprises of that nature. An aqueduct, an inclined plane, a tide-lock, a dam, an embankment blown up, is the work of an hour, and yet would interrupt the navigation perhaps for months.

The necessity of a regular army, even in time of peace, is a principle well established by our legislation. The importance of a well-organized militia is incident to the nature of our institutions, well understood by the people, duly appreciated by the government, and finely illustrated in our history. Nothing, therefore, need be said on these subjects, considered as general principles. It may, however, in a succeeding part of this communication, be deemed proper to hazard a conjecture or two touching the expediency of a peculiar organization of the latter.

Before going further, it is proper to be more explicit as to the sense in which the terms "*navy*" and "*fortifications*" have been employed.

By the term *navy*, only that portion of our military marine which is capable of moving in safety upon the ocean, and transferring itself speedily to distant points, is meant. Floating batteries, gunboats, steam batteries, &c., these, and, indeed, all other modes of defence which are restricted in their sphere of action,

tied down to local defence, and are produced chiefly in cases where the localities deny to fortifications their best action, are regarded as auxiliary to fortifications, and as falling within the same category. Under the term "fortifications," used as expressive of security afforded thereby to the seaboard, have been included permanent and temporary fortifications, the auxiliaries just mentioned, and both fixed and floating obstructions to channels.

The circumstances which must govern in framing a system of fortifications are—

1st. The importance of the objects to be defended. Great naval establishments, great cities, &c., invite to greater preparation on the part of an enemy, and demand corresponding means of resistance.

2d. The natural advantages or disadvantages of the position to be fortified. It will often happen that the defence of a position of great consequence can be effected with smaller works, and at less expense, than a place of much less value. It will not follow, therefore, that the *expense* of fortifications will be proportionate to the importance of the object, though it is indispensable that the strength should be.

3d. The species of attack to which the place is liable. Some places will be exposed only to capture by assault; others by siege; others to reduction by cannonade, bombardment, or blockade; and some to a combination of any or all these modes. If the enemy against which we fortify be unprovided with artillery, the mode of fortifying becomes peculiar.

4th. Whatever may be the circumstances, it is of vital importance that all the works should be fully adequate to the object, and that they should, even with a small garrison, be perfectly safe from a *coup de main*.

Proceeding now to a concise description of the maritime frontier, considered as a whole, the several sections will be afterwards separately examined, applying as we go to the several positions the works already projected, and pointing out as far as practicable such as remain to be planned. The sea-coast of the United States is comprised within the 24th and 46th degrees of north latitude, and spreads over 27 degrees of longitude. The general direction of that part which lies on the Atlantic, north of the peninsula of Florida, is N.N.E. and S.S.W. This peninsula stretches out from the continent in a direction a little east of south; while that part which lies on the Gulf of Mexico corresponds nearly with the 30th parallel of north latitude.

Without estimating any of its indentations not properly belonging to its outline, and carrying our measure from point to point wherever the breaks are at all abrupt, the line of coast may be stated to be 3,300 miles in length.

Nearly parallel with the Atlantic coast extends a chain of mountains separating the sources of rivers flowing, on the one hand, directly into the ocean from those which run into the Gulf of St. Lawrence or the Gulf of Mexico. Even in the most lofty portion of this chain numerous gaps afford facilities for crossing by roads or railways.

Occasional expansions, at high elevations, present sufficient surface to afford the water required for crossing by canals; and, in other places, the rivers themselves have severed the chain, leaving no impediments to communications of either kind. On both sides of these mountains the country offers numerous natural means of intercommunication, and facilities and inducements for the creation of artificial ones in endless combination.

From this general description it may be deduced that, notwithstanding the great extent of our seaboard, the safety of each section of it is a matter not devoid of interest to every portion of the people, however remote geographically, at least so long as the nation shall continue her commercial relations with the rest of the world; and, indeed, until she shall find it her interest to interdict the circulation of domestic commerce through the avenues which nature or art may

have created—a commerce of inestimable value at all times, and becoming more necessary, as well as more valuable, on every interruption of foreign traffic.

As lying closely connected with the coast, it will be convenient to describe briefly in this place that line of interior communication on which, in time of war, reliance must be placed as a substitute, in part, for the exterior coasting navigation of peace.

Beginning in the great bay to the north of Cape Cod, it passes overland either into Narraganset roads or Buzzard's bay; thence through Long Island sound to the harbor of New York; thence up the Raritan, overland to the Delaware, down this river some distance, overland to the Chesapeake, down the Chesapeake, up Hampton roads and Elizabeth river, through the Dismal swamp to Albemarle sound; thence through the low lands, swamps, or sounds of the Carolinas and Georgia to the head of the peninsula of Florida; thence overland to the Gulf of Mexico; thence through the interior sounds and bays to New Orleans, and thence through low lands, swamps, and bayous to the western boundary. Some of the few and brief natural interruptions of this extensive line have already been removed; some are rapidly disappearing before the energy of local or State enterprise, and to the residue the public attention is directed with an earnestness which leaves no reason to fear that they will not in due time be overcome. In all cases where this line becomes much exposed to an enemy from the difficulty of fortifying broad waters, communications more inland are even now afforded, or are in progress by canals or railroads, which will be perfectly safe.

Proceeding now to a more minute examination of the coast, it will be convenient to divide it into four distinct parts, namely: the northeastern, extending from the English province of New Brunswick to Cape Cod; the middle, from Cape Cod to Cape Hatteras; the southern, from Cape Hatteras to Cape Sable; and the Gulf of Mexico frontier from Cape Sable to the Mexican borders. They will be taken up in the order in which they stand above.

THE NORTHEASTERN SECTION OF THE COAST.

The northeastern section is characterized by its serrated outline and its numerous harbors; and, though differing in these respects entirely from the other sections, is not less distinguished in its climate than by the prevalence, at certain seasons, of dense and lasting fogs. The extent of this section, measuring from point to point wherever the breaks of the coast are abrupt, is about five hundred miles, while a straight line from Cape Cod to Quoddy Head is hardly half that distance. The eastern half of this coast is singularly indented by deep bays, the shores being universally rocky, and having numerous islands surrounded by deep water, which not only add to the number of harbors, but afford, besides, an interior navigation well understood by the hardy coasters of this section, and measurably secured by its intricacies and the other dangers of this foggy and boisterous region from interruption by an enemy. The western half, though it has two very prominent capes and a few deep bays, is much less broken in its outline than the eastern. It is covered by few islands, in comparison, but contains, nevertheless, several excellent harbors.

The eastern harbors of Maine are exposed in a peculiar manner. They are not only on the flank of our line, but they are also quite near to public establishments of the greatest maritime powers; they are, moreover, as yet, backed by a sparse population only, and are consequently both weak and exposed. The time cannot be very distant, however, when, becoming wealthy and populous, they will be the objects of a full portion of the public solicitude. Works designed for these harbors must therefore be calculated for the future—must be founded on the principle that they are to defend places much more important than any now existing there; that, being very near the possessions of a foreign power, they will be, in a particular manner, liable to sudden and to repeated

attacks; and that, lying at the extremity of the coast, they can be only tardily succored. The works erected on this part of the coast should be so strong as to resist escalade, and to hold out long enough for the arrival of relief. Feebler works than these might be more injurious than beneficial; their weakness would, in the first place, invite attack, and it being a great advantage to occupy fortified places in an adversary's territory, the enemy would prepare himself to remedy the military deficiencies of these forts by adding temporary works, by the force of his garrisons and the aid of his vessels.

No surveys have been made of these harbors and no plans formed for their defence. It may be well to observe here, once for all, that much confidence is not asked for the mere conjectures presented below as to the number and cost of the works assigned for the protection of the harbors which have not yet been surveyed. In some cases there will be mistakes as to the number of forts needed, and in others the errors will be in the estimated cost, but the errors will probably as often lie on one side as on the other, so that the sum total may be a sufficient approximation to the truth.

This is the place to state, also, that the early estimates furnished for the projected works require considerable augmentation. The explanation of this is easy. In preparing those estimates the board of engineers obtained lists of prices from different sections of the country, and adopted them as accurate. Whether the lists thus furnished referred to materials and workmanship of inferior quality, or because they were drawn up at a period of unusually low prices, it has been found by experience that these prices were almost all too low. The board calculated with great care and labor, and with perfect honesty of purpose, applying the prices just mentioned to all the quantities susceptible of measurement and calculation; and they applied themselves with no less diligence and good faith to the estimate of expenses of a contingent nature, and, for the greater part, not to be foreseen with accuracy, either as to amount or kind. Having no experience in large constructions, these last were at least but conjectures; and, as the history of constructions on several parts of the coast has since shown, they were much too small. In consideration of these deficiencies, of the present great elevation of prices, and of the liability to great increase of cost from occasional interruptions of progress and breaking up of systems of operations, it is thought that about fifty per centum should be added to the amounts given in the estimates.

Eastport and Machias may be brought forward as places that will unquestionably be thought to need defensive works by the time, in the order of relative importance, the execution of them can be undertaken by the government. There are several small towns eastward of Mount Desert island that may, at that period, deserve equal attention. At present, however, the places named above will be the only ones estimated for, and \$100,000 will be assumed as the cost of each.

Mount Desert island, situated a little east of Penobscot bay, and centrally as regards the Kennebec and St. Croix rivers, having a capacious and safe roadstead, affording anchorage for the highest class of vessels, and easily accessible from sea, offers a station for the navy of an enemy superior to any other on this portion of the coast. From this point his cruisers might act with great effect against the navigation of the eastern coast, especially that of Maine, and his enterprises of every kind could be conducted with great rapidity against any point he might select. These considerations, added to the advantages which would result in certain political events from our occupying so advanced a station, whence we might act offensively, together with the propriety of providing places of succor on a part of the coast where vessels are so frequently perplexed in their navigation by the prevailing fogs, lead to the conclusion that the fortification, in a strong manner, of this roadstead, is highly necessary. A survey of this island was begun many years ago, but the party being called off to other duties, it was

never completed; the project of defensive works has not been formed. The entire cost may be, as assumed by the engineer department, \$500,000.

Castine.—It would seem to be impossible on this coast to deprive an enemy, enjoying naval superiority, of harbors, or to prevent his using them as stations during the war, insular situations, which his vessels would render unapproachable, being so numerous; but it seems proper that those positions of this nature, which are at the same time the sites of towns, should be secured against his visitations. During the last war the English held the position of Castine for some time, and left it at their own pleasure. It is probable that a work costing about \$50,000 would deter an enemy from again making choice of this position.

Penobscot bay.—Upon this bay, and upon the river of the same name flowing into it, are several flourishing towns and villages. Of the many bays which intersect this coast, the Penobscot is the one which presents the greatest number of safe and capacious anchorages. As before observed, a large portion of these harbors must, for the present, be left without defences, but the valuable commerce of the bay and river must be covered, and to afford a secure retreat for such vessels as may be unable to place themselves under protection of the works to the east or west of the bay, the passage of the river must be defended. The lowest point at which this can be done, without great expense, is at the narrows opposite Bucksport. A project has been given in for a fort at that position, now estimated at \$150,000.

West of the Penobscot comes *St. George's bay, Broad bay, Damariscotta, and Sheepscot*, all deep indentations, and leading to towns, villages, and various establishments of industry and enterprise of greater or less present value and future promise. These have not been surveyed, and, of course, no plans have been formed for their defence; \$400,000 are assigned to the fortification of these waters. The Sheepscot is an excellent harbor of refuge for vessels of every class.

Kennebec river.—This river, one of the largest in the eastern States, enters the sea nearly midway between Cape Cod and the mouth of the St. Croix. It rises near the source of the Chaudière, a tributary of the St. Lawrence, and has once served as a line of operations against Quebec. The situation and extent of this river, the value of its products, and the active commerce of several very flourishing towns upon its banks, together with the excellence of the harbor within its mouth, will not permit its defence to be neglected. Surveys incomplete—estimated cost of defences, as formed by the engineer department, \$300,000.

Portland harbor.—A little to the northwest of Cape Elizabeth is the harbor of Portland. The protection of the town, of the merchantmen, and of the ships-of-war that may be stationed there to guard the coast or that may enter for shelter, all of them important objects, may be secured, as an inspection of the map of the town and harbor will show, by occupying Fort Preble Point, House island, Hog Island ledge, and Fish Point. At the same time, if the two channels to the west and east of Hog Island ledge can be obstructed at small expense, which is hardly a matter of doubt, although some final surveys are necessary to decide this point, there will be no necessity for a battery on the ledge; and Fish Point need be occupied only by such works as may be thrown up in time of war. The expense, as now estimated, of the works planned for the defence—not including the defence of Hog Island channel, of which the mode has not been settled—will be \$155,000 for Fort Preble, and \$48,000 for House island. For Hog Island channel, say \$135,000.

The mouths of the Saco, Kennebunk, and York.—Comparatively small works will, it is thought, adequately cover these places, and \$75,000 is assumed as their aggregate cost.

Portsmouth Harbor.—The only good roadstead, or good harbor, between Cape Elizabeth and Cape Ann, is Portsmouth harbor, within the mouth of Piscataqua

river. Line-of-battle ships can ascend this river as high as Fox Point, seven miles above the town of Portsmouth. Between this point and Shooting Point is a branch of the river communicating with Great bay. This branch, which is one-third of a mile wide, presents, for two miles in length, an excellent cover for all sorts of vessels. This situation, sufficiently commodious for a secondary depot, designed to repair vessels of war seeking an asylum in this river, is too near the sea for a great naval depot; and, in other respects, does not possess the advantages of Boston, as was shown in the report of the board of engineers, 1820. Still, as Portsmouth is an excellent harbor and station, and as it is indispensable that some, at least, of these stations be provided with the necessary establishments for repairs, the depot in this river should be maintained. It is to be regretted that the bay to the south of Fox Point was not chosen as the site of the navy yard instead of Fernal's island. Being where it is, it will be necessary, in time of war, to make some particular dispositions for the protection of the yard from an attack from the north shore of the river.

The position of Fort Constitution must certainly, and that of Fort McCleary may possibly, be occupied by these defences; though the works themselves, especially the first named, must give place to such as will better fulfil the object. The other positions for forts are Gerrish's Point, — island, and Clark's island; some, if not all, of which must be occupied. Some final surveys must be made before the necessary works can be accurately determined on, and before estimates can be made; but there is reason for believing that the entire expense of fortifying this harbor will not fall short of \$500,000.

Newburyport harbor.—This is the next port south of Portsmouth. The Merrimack river, the mouth of which forms this harbor, is obstructed at its junction with the sea by a bar, on which there was formerly but six or seven feet of water at low tide. This entrance has since, however, been thought to be essentially important, and, at any rate, it leads to a beautiful, prosperous, and wealthy city. The points forming the mouth of the river are continually changing their form and position; near the middle of the present channel is said to be the spot once occupied by a fort. Under such circumstances, it seems advisable to rely, for the defence of this harbor, on forts to be thrown up on the approach of war, unless the works of harbor improvement now in progress shall be found to give stability to the points in question. It is thought that \$100,000 would defend this entrance adequately.

Gloucester harbor.—The position of this harbor, near the extremity of Cape Ann, places it in close relation with the navigation of all Massachusetts bay, and gives it an importance beyond what would be assigned to it on account of its local interests. No surveys have yet been made, but it is believed that sufficient defences may be provided for \$200,000.

Beverly harbor.—This harbor will be defended chiefly by a portion of the works designed for Salem; \$50,000, in addition, will secure it.

Salem harbor.—The port of Salem is distant from Marblehead two miles, being separated therefrom by a peninsula. The occupation of the extremity of Winter island, (where are the ruins of Fort Pickering,) on one side, and of Naugus Head on the other, will effectually secure this harbor. Projects have been presented for this defence, now estimated at \$225,000.

Marblehead harbor.—Besides covering, in some measure, the establishment at Boston, the harbors of Marblehead and Salem possess an important commerce of their own, and also afford shelter for vessels prevented by certain winds from entering Boston or pursuing their course eastward. The mode of defending Marblehead harbor, proposed by the board of engineers, consists in occupying, on the north side, the hillock which commands the present Fort Sewall, (which will be superseded by the new work,) and on the south, the position of Jack's Point. The two works will cost \$318,000.

Boston harbor.—We come now to the most important harbor in the eastern

section of the coast, and, considering its relation to general commerce and the interests of the navy, one of the most important in the Union. After a careful examination of all the necessary conditions of such a problem, the board of naval officers and engineers, in their joint report of 1820, gave this harbor a preference over all other positions to the east, and, inclusive of New York bay and the Hudson, as the seat of the great northern naval depot. For reasons, at large, for this selection, reference is made to the report of 1820. But, even should the recommendation therein contained remain un sanctioned, still Boston is a city of great wealth, possesses an extensive and active commerce, and contains already within its harbor an establishment on which great reliance is placed to give growth and energy to our navy. The present forts in Boston harbor defend merely the interior basin from attacks by water, but as it often happens that vessels enter Nantasket roads with a wind too scant to pass the narrows, or are detained in President roads by light winds or an adverse tide; as the former, especially, is a very convenient anchorage, from whence to proceed to sea; and above all, as Nantasket roads afford the best possible station for a blockading squadron, it was deemed indispensable to place permanent defences at the mouth of the harbor. The project of the defence regards the existing works, with the necessary repairs and modifications, as constituting a second barrier; contemplates placing a permanent fort on George's island; another at Nantasket Head, having two advanced works on the head and one on Hog island; reducing the latitude of Gallop island, in order to destroy its command over George's island; and filling up the Broad Sound channel, so as to leave no passage, in that direction, for ships-of-war. These are estimated to cost \$2,337,000. Besides the works of a permanent character, it will be necessary, in the beginning of a war, to erect several temporary works in the lower part of the harbor, in order to make that defence more perfect, and also on certain lateral approaches to the navy yard.

Plymouth and Provincetown harbors.—These are the only harbors on the northeastern section of the coast south of Boston. They have a commerce of some consequence of their own; but they are particularly interesting in reference to the port of Boston, and to the transition from the middle to the eastern section of the coast, in which respect they would become still more important should the proposed canal from Buzzard's to Barnstable bay ever be executed. While these harbors are undefended, an enemy's squadron blockading Massachusetts bay will have ports of refuge under his lee of which he would not fail to avail himself to maintain his blockade, even throughout the most stormy seasons, knowing that the wind which would compel him to seek shelter would be adverse to outward-bound, and fatal, should they venture near the cape, to inward-bound vessels. While in possession of these harbors, an enemy would have constantly under his eye the harbor of Boston, the passage round Cape Cod, and that through the canal. To these considerations, going to establish the necessity of securing these harbors by proper defences, it must be added that, being thus deprived of the shelter afforded by these ports, an enemy would be unable to enforce a rigorous investment. In the first place, he would be often deterred from taking a station near the land, lest he should be caught embayed by the violent easterly winds prevailing at certain seasons; in the next place, he would always take a good offing on every distinct indication of these winds, thereby leaving a clear coast to be profited of by our own vessels at the first instant of a change of weather. Our own vessels, coming in from sea, and finding an enemy interposed between them and Boston, or being turned from their course by adverse winds, would, in case of the defence of these harbors, find to the south of Boston a shelter equivalent to that provided to the north by the fortifications of Marblehead, Salem, Gloucester, and Portsmouth.

The surveys of these harbors have not been handed in, and no plans have been formed for their defence. Plymouth harbor may be suitably defended, it

is thought, by the occupation of Gurnet Point, and at no great expense; while it is thought that, to fortify Provincetown harbor in such a way as to cover vessels taking shelter therein, and at the same time to deprive an enemy of all safe anchorages, will involve considerable expense, probably no nearer estimate can be formed at present than that offered by the engineer department, which gave \$100,000 to Plymouth and \$600,000 to Provincetown.

Should the canal above mentioned be executed, it will be necessary to place a small work at each of its outlets, to prevent the destruction of the means by which the transit of vessels in and out of the canal must be accomplished.

MIDDLE SECTION OF THE COAST.

The coast between Cape Cod and Cape Hatteras differs from the northeastern section in possessing fewer harbors, in having but little rocky and a great portion of sandy shore, wherein it resembles the southern section; in its milder climate and its clearer atmosphere; and it differs from all the other portions in the depth and magnitude of its interior seas and sounds, and in the distance to which deep tide navigation extends up its numerous large rivers.

The circuit of the coast, not including the shores of the great bays, measures 650 miles, while a straight line from one of the above-named capes to the other measures about 520 miles.

Martha's Vineyard sound.—To the south of Cape Cod lie the islands of Nantucket and Martha's Vineyard, which with several smaller islands on the south, and the projection of Cape Malabar on the east, enclose Martha's Vineyard sound. The channels through this sound being sufficient for merchant vessels, and one of them allowing the passage even of small frigates, are not only the constant track of coasting vessels, but owing to the relative situation of Long Island sound and Narraganset roads, and to the existence of two tolerably safe harbors at convenient distances east of Gayhead, namely, Tarpaulin sound and Holmes's Hole, the sound is generally aimed at by all eastern vessels arriving from foreign voyages in the tempestuous months. There are certain difficulties, however, attending the navigation of this sound, arising from the want of a harbor near the eastern extremity, which have suggested the project of an artificial harbor at the northeast point of Nantucket island. Besides these harbors on the direct route through the sound, there are the harbors of Nantucket, Edgartown, and Falmouth.

In addition to the many thousand vessels which pass this water annually, of which there are sometimes forty or fifty, a portion containing the most valuable cargoes, to be seen in the harbors awaiting a change of wind, there is supposed to be at least 40,000 tons of shipping owned in the towns of this sound, and employed in the whale fishery. If this portion of the coast is to be defended at all, it must be by fortifications, for there is no population scarcely, except that of the towns, and this is believed to be entirely without military organization. A privateer might run into either of these harbors and capture, destroy, or levy contributions at pleasure; \$250,000 may perhaps suffice for the defence of all these places against the kind of enterprises to which they are exposed.

Buzzard's bay.—Interposed between the island of Martha's Vineyard and the main are the Elizabeth islands, bounding Buzzard's bay on the south. This bay, although of importance as leading to the proposed canal to Barnstable bay, as covering the flourishing town of New Bedford, and as being one of the natural harbors to be used by an enemy in forcing the blockade of Narraganset roads, cannot be defended by fortifications, owing to its great breadth.

New Bedford and Fairhaven harbor.—No survey has been made of this harbor, which covers two of the most flourishing towns. It is certainly defensible, and probably for the amount assumed by the engineer department, namely, \$300,000.

Narraganset bay.—The properties of this great roadstead will be here adverted to very briefly; more minute information may be obtained by reference to reports of 1820 and 1821.

It is the only harbor on the coast accessible with a northwest wind, which is the most common and violent of the most inclement season; and as winds from N.N.W. to S.S.W. round by the east serve for entering both Boston and New York harbors, while this harbor can be entered with all winds from northwest to east round by the west, it follows that, while we possess this harbor, vessels may be certain of making shelter on this part of the coast with any wind that can blow, excepting only between N.N.W. and NW. From this station the navigation of Long Island sound, and especially the communication between that sound and Buzzard's bay or Martha's vineyard sound, may be well protected. The blockade of the excellent harbor and naval station of New London will be rendered difficult. From this station the navy will command southwardly, as from Hampton roads northwardly, the great inward curve of the coast between Cape Cod and Cape Hatteras; the influence of which command over the blockading operations of an enemy will be apparent, when it is considered that the only harbors of refuge he can have will be the Delaware, Gardiner's, and Buzzard's bays, and that it is far from certain that improvements in the auxiliaries of fortifications may not deprive him of these also.

If Narraganset bay were without defence, an enemy would occupy it without difficulty, and, by the aid of naval superiority, form a lodgement in Rhode Island for the war. Occupying the island alone, or connecting therewith the position of Tiverton Heights, opposite the northern extremity of the island, a position which is of narrow front, easy to secure, and impossible to turn, he might defy all the forces of the eastern States, drive the United States to vast expense of blood and treasure, and while this position of his troops would keep in alarm and motion all the population of the east, feigned expeditions against New York, through Long Island sound, or against more southern cities, would equally alarm the country in that direction; and thus, although he might do no more than menace, it is difficult to estimate the embarrassment and expense into which he would drive the government.

Of old forts, some of which were never finished, Fort Wolcott and Fort Green are the only ones retained in the projected system of defence.

The project of defence proposed by the board of engineers contemplates for the middle channel, on Brenton's Point, a strong fort, (now well advanced,) with outworks; another strong fort and outworks on the Dumplings; a smaller fort on Rose island, and the repair and modification of Fort Wolcott and Fort Green. The eastern passage is already shut by the permanent bridge at Howland's Ferry. As to the western passage, three modes present themselves: 1st, reducing the depth of water by an artificial ledge, so as, while the passage shall be as free as now for merchant vessels, to prevent the passage of ships-of-war; 2d, relying on fortifications alone to close the channel; or, 3d, resorting in part to one and in part to the other mode just mentioned. Being the least expensive and most certain, the estimate was founded on the first.

The total cost of the Narraganset defences are estimated at \$2,050,000.

Gardiner's bay.—This most valuable harbor to an enemy investing this part of the coast is probably not defensible by fortifications alone. It has not been surveyed, however, and at no distant day it will be an interesting question, whether by steam batteries, or some similar means, under the protection of and aided by fortifications, its defence may not be accomplished. The necessity for fortifying this bay will be more evident, should the railroad through Long Island, in contemplation, (perhaps in progress,) be constructed.

The engineer department has assumed the probable cost of the works at \$400,000.

Sag Harbor, New York, and Stonington, Connecticut.—Neither of these have

been surveyed with reference to defence. The first is possessed of a considerable tonnage; and the second, besides being largely engaged in commerce, is about to be the termination of a railroad from Boston. \$100,000 may be assigned to the first, and \$200,000 to the other.

New London harbor is very important to the commerce of Long Island sound; and as a port of easy access, having great depth of water, very rarely freezing, and being easily defended, it is an excellent station for the navy. It is also valuable as a shelter for vessels bound out or home, and desirous of avoiding a blockading squadron off Sandy Hook. In the plan of defence, the present Forts Trumbull and Griswold give place to more efficient works, whereof the expense is estimated at \$314,515.

Mouth of Connecticut river.—This river has been shown to be subject to the expeditions of an enemy. It has not been surveyed in order to determine on the mode of defending it; and \$100,000 is introduced here as the conjectural cost.

New Haven harbor.—It is proposed to defend this harbor by improving and enlarging Fort Hale, and substituting a new work for the slight redoubt erected during the last war, called Fort Wooster. The expense of both may be stated at \$90,000.

There are several towns between New Haven and New York, on both sides of the sound; none of them are very large as yet, though most, if not all, are prosperous and rapidly increasing. Although, in their present condition, considering their local situation, it might not be deemed necessary to apply any money to permanent defences, yet, as part of the present object is to ascertain, as near as may be, the ultimate cost of completely fortifying the coast, it seems proper to look forward to the time, perhaps not remote, when some of these towns may become objects of considerable predatory enterprise. Bearing in mind the increase of population in the mean time, and the manner in which the places generally are situated, it is thought that \$200,000 will be enough to defend them all.

New York harbor.—The object, of the projected works for the vicinity of New York are to cover the city against an attack by land or sea; to protect its numerous shipping; to prevent, as much as possible, the blockade of this great port, which will have progressively added to the immense wealth of its own rivers, greater and greater amounts of the productions of the boundless regions on the lakes; and to cover the interior communication uniting the Raritan with the Delaware. In the present condition of the defences of this harbor an enemy would encounter no great opposition, whether his attack was made by land or water. Coming by the sound, he might land within ten miles of the city, upon the main, upon Long Island, or upon both; and, coming into the lower harbor, he might, while the works on Staten Island are in their present condition, risk forcing the passage of the Narrows, as well as the upper works, anchoring in the Hudson or in the East river; or he might land in Gravesend bay, eight miles from the city, and march directly to Brooklyn, where he would find the navy yard lying at his mercy, and whence he might levy a contribution or destroy half the city. The only mode of resistance would be the expensive, harassing, and uncertain one of arraying a large body of militia upon Harlaem and Brooklyn Heights, and this could be resorted to only in the event, by no means certain, of receiving timely intelligence of his design.

If we fortify *Throg's Neck* and *Wilkin's Point*, on the East river, and if we complete the works at the Narrows, making them all too strong to be carried by a *coup de main*, we shall secure the means of transferring the neighboring militia upon the flanks and rear of an enemy should he march upon Brooklyn; while we shall secure the same advantage should he pursue the

route by Harlaem, besides increasing the length of his march to twenty miles through an intersected country.

This arrangement of defensive works, necessary as it is, still leaves the lower harbor open to an enemy's vessels; in which harbor, safe at all seasons, he could enforce the strictest blockade; cut off the lines of interior communication by the Raritan, and avail himself at any moment of a landing place in dangerous proximity to the city and navy yard. In view of these considerations, the board of engineers projected additional works: one for the East Bank, and another for the Middle Ground, which would perfect the defences of the harbor; compelling an enemy attacking on this side to land upon a dangerous coast, near thirty miles from his object, and to enforce his blockade by riding on the open sea, with a dangerous coast on either hand. Before determining on the works last mentioned, the board went into much research in order to ascertain whether the sand banks mentioned were unchangeable; and it was thought to have been very fully proved that there had been no material change in more than sixty years. This apparent stability of the shoals encouraged them to devise the projects referred to.

Recent surveys, it has been said, have discovered a new channel. If this be so, it may not be prudent to resort to the project, and it may become necessary to devise other means; but whatever they may be, they must, from the nature of the case, be very expensive; and there will be no great error, probably, in taking the estimated cost of the projected batteries as the cost of such mode of defence as may be finally resolved on. The cost of the complete defence of New York remaining to be incurred is, according to the estimates, \$5,369,824.

Delaware bay and city of Philadelphia.—The coast, from the mouth of the Hudson to the Chesapeake, as well as that on the south side of Long Island, is low, sandy, covered by numerous sandy islands lying near and parallel to the coast, and having, besides the Delaware, many inlets and interior basins, but none, excepting the one named, affording water enough for sea-going vessels. The Delaware bay itself, being wide and full of shoals, having an intricate channel, and being much obstructed by ice at certain seasons, affords no very good natural harbor within a reasonable distance of the sea. The artificial harbor now in course of construction near Cape Henlopen will, it is hoped, fully realize the expectations of its projectors, in which event it must be securely fortified. No plans have, however, as yet been made with that object; and as to the probable cost, nothing better can now be done than to assume the conjectural estimate of the engineer department, namely, \$600,000.

The lowest point at which Philadelphia is defensible is at Pea Patch island, about forty-five miles below that city. A fort on that island, to replace the one destroyed by fire; a fort opposite the Pea Patch, on the Delaware shore; a temporary work on the Jersey shore, to be thrown up at the commencement of war, and floating obstructions placed in the channel, under the fire of these works, will effectually cover Philadelphia, the other important places on the river, and the outlet of the canal connecting the Delaware and Chesapeake bays. The plans and estimates for a fort to replace Fort Delaware are not completed. Taking the expense thereof at \$600,000, the expense of the system, inclusive of temporary works, will be \$1,121,000.

Chesapeake bay.—The board of naval officers and engineers intrusted with the selection of sites for great northern and southern naval depots, recommended, in their joint reports of 1819 and 1820, Burwell's bay, on James river, for the one, and Charlestown, near Boston, for the other. They also recommended Boston harbor and Narraganset bay, at the north, and Hampton roads, at the south, as chief naval rendezvous. In those reports the commission entered at large into the consideration of all the matters of these important objects; and reference is now made to those reports for many very interesting details.

Hampton roads, James river, and Norfolk.—The works projected for the defence of these are, 1st, a fort and advanced lunette at Old Point Comfort; 2d,

a casemated battery on the Rip Rap shoals; and 3d, a line of floating obstructions extending across the channel, between these works. In the event of a great naval depot being fixed on James river, it might ultimately be desirable to provide additional strength, by adding works on the positions of Newport's News, Nasaway shoals, and Craney Island flats. Exclusive of these, the cost of completing the works is estimated at \$723,188.

The existing fort, viz: Fort Norfolk, will aid in the defence of the city of Norfolk and of the navy yard. It is a small and inefficient work, but may be made useful as an accessory to the general defensive operations.

Harbor of St. Mary's.—The central situation, as regards the Chesapeake, of this fine basin; its relation to the Potomac; its depth of water, and the facility with which it may be defended, indicates its fitness as a harbor of refuge for the commerce of the bay, and as an occasional if not constant station during war, for a portion of the naval force. A survey has been made, but no projects have been formed. The engineer department has conjectured that the cost may be \$300,000.

Patuxent river.—The more effectually to protect the city of Washington from a sudden attack by troops landed at the head of navigation of the Patuxent, and to provide an additional shelter for vessels, a fort has been planned to occupy Point Patience, and another to occupy Thomas's Point, both about six miles from the Chesapeake. Their expense will be \$505,000.

Annapolis harbor.—No surveys or plans of defence have been made. The existing works are very inefficient. The estimate made by the engineer department, viz: \$250,000, is adopted.

Harbor of Baltimore.—The proximity of Baltimore to the bay places that city in a dangerous situation. In the present state of things, an enemy, in a few hours' march, after an easy landing, without being exposed to a separation from his fleet, can make himself master of that great commercial emporium.

Baltimore requires for its security two forts in the Patapsco: one at Hawkin's Point, and the other at the extreme end of the flat, off Sollers's Point. Besides the advantages which will result of obliging the enemy to land at a greater distance, thereby delaying his march, gaining time for the arrival of militia, and preventing his turning the defensive positions our troops might occupy, it will be impossible for him to endanger the city or its shipping by a direct attack by water. The present Fort McHenry, Redoubt Wood, and Covington battery, should be retained as a second barrier. Allowing \$150,000 for putting these in a more efficient state, the expense will be \$1,517,000.

Mouth of Elk river.—The completion of the line of communication from the Delaware to the waters of the Chesapeake makes it necessary to place a fort somewhere near the mouth of the Elk, in order to prevent an enemy from destroying, by a sudden enterprise, the works connecting these communications with the river. There have been no surveys made with a view to establish such protection, but the engineer department estimates the cost of a suitable fort at \$300,000.

City of Washington, Georgetown, and Alexandria.—Fort Washington covers these cities from any attack by water, and will oblige an enemy to land at some fifteen or eighteen miles from Alexandria, should that city be his object. It will also serve the very important purpose of covering the troops crossing from Virginia, with a view to fall on the flanks of an enemy moving against the capital. All these objects would have been better fulfilled had the work been placed at lower Cedar Point. As it is, however, the forts in the Patuxent being constructed, and the militia of the surrounding country in a due state of preparation, an enterprise against these cities would be one of great hazard. Still, a work on Cedar Point should on no account be omitted. The department estimates its cost at \$300,000.

From the mouth of the Chesapeake to Cape Hatteras there occurs no inlet navigable by sea-going vessels.

SOUTHERN SECTION OF THE ATLANTIC COAST.

This coast is invariably low, and, for the greater part, sandy, much resembling the coast from Cape Hatteras to Montaug Point. A ridge of sand, here and there interrupted by the alluvion of the rivers, extends through its whole length; this ridge, in certain portions, lies on the main land, while in others it is divided therefrom by basins or sounds of various width and depth, and is cut up into islands by numerous channels of greater or less depth, connecting these interior waters with the sea. Wherever this sand ridge is broken, its place is occupied by low and marshy grounds, bordering the principal and the many lesser outlets of the rivers.

The nature of the country through which the rivers of this coast flow, after leaving the mountains, is such that the banks being easily abraded by the current, the waters are always turbid, and are continually transporting new supplies for the formation of alluvion and the maintenance of extensive submarine banks, shoals, and bars; that these do not rapidly increase is owing to the force of the current, the action of the sea, and the mobility of the particles of matter. It is to the same cause, namely, the wearing away of the shores of the rivers, that is to be attributed the want, on this coast, of harbors unobstructed by bars, and which, as a coast, particularly distinguish this and the Gulf of Mexico frontier (where similar operations have been going on) from the more northern and eastern portions.

Ocracock inlet.—The shallowness of the water on the bars at Ocracock effectually excludes all vessels-of-war from the harbor within. But as this is now an outlet of an extensive commerce, and through this opening attempts might be made in small vessels, or in boats, to interrupt the line of interior communication, whereon so much might depend in time of war, timely preparation must be made of temporary works equal to defence of it against all such minor enterprises.

Beaufort harbor, North Carolina.—Work completed.

Mouth of Cape Fear river.—The defence of the main channel of Cape Fear river requires, in addition to the work nearly completed on Oak island, another fort on Baldhead, and the defence of the smaller channel will require a redoubt on Federal Point. The battery, magazine, block-house, quarters, &c., at Smithville, should remain as accessories. The cost is set down at \$258,000.

Georgetown harbor.—The first inlet of any consequence south of Cape Fear river is at the united mouths of the Waccamaw, Pedee, and Black rivers, forming Georgetown harbor, which is a commodious and capacious bay, having sufficient water within and upon the bar, near the mouth, for merchant vessels and small vessels-of-war. A survey of this harbor, begun many years ago, has never been completed, and no projects of defence have been made. It is probable that a work placed near Moscheto creek or on Winyaw Point would give adequate strength, at the cost of about \$250,000.

Santee river and Bull's bay.—About ten miles south from Georgetown entrance are the mouths of the Santee, the largest river in South Carolina. It is not known whether the bars at the mouths of this river have sufficient water for sea-going vessels; the same uncertainty exists as to the depth into Bull's bay. It may be well, however, to consider them, and the other inlets between Georgetown and Charleston, as calling for small works capable of resisting boat enterprises, and to assign to them \$100,000. Should they prove to be navigable for privateers they will need a larger expenditure.

Charleston, South Carolina.—The city, situated at the junction of Ashley and Cooper rivers, is about five miles, in a direct line, from the sea. Between

it and the ocean is a wide and safe roadstead for vessels of any draught. Upon the bar, lying three or four miles outside of the harbor, there is, however, only water enough for the smaller frigates and for large sloops-of-war. On the southwest side of the harbor is James's island, through which are several serpentine passages, more or less navigable for boats and barges; some of them communicate directly with the sea and Stono river. Whappoo cut, the most northerly passage from Stono to Charleston harbor, enters Ashley river opposite the middle of the city. Interior natural water communications exist also to the southwest of Stono river, connecting this with North Edisto river, the latter with South Edisto and St. Helena's sound; this again with Broad river, and, finally, this last with Savannah river. On the north side of the harbor of Charleston lies Sullivan's island, separated from the main by a channel navigable to small craft. To the northeast of Sullivan's island an interior water communication extends to Bull's bay, and even beyond, to the harbor of Georgetown.

From this sketch, it is apparent that it will not do to restrict the defences to the principal entrance to the harbor. The lateral avenues must also be shut. And it is probable that accurate surveys of all these avenues will show that the best mode of defending the latter will be by works at or near the mouths of the inlets, as the enemy will be kept thereby at a greater distance from the city; the lesser harbors formed by these inlets will be secured, and the line of interior communication will be inaccessible from the sea.

No position for the defence of the principal entrance to Charleston harbor can be found nearer to the ocean than the western extremity of Sullivan's island. This is at present occupied by Fort Moultrie, a work of some strength, but by no means adequate to its object, its battery being weak, and the scarp so low as to oppose no serious obstacle to escalade. How far this work, by modification of its plan and relief, may be made to contribute to a better defence of the harbor, cannot now be determined.

On a shoal nearly opposite Fort Moultrie the foundation of a fort has been begun, which will have a powerful cross-fire with Fort Moultrie. It is presumed that about \$800,000 would put these works in a complete state.

Stono, North Edisto, and South Edisto.—All these must be fortified, at least in such a manner as to secure them from enterprises in boats or small vessels. To that end \$50,000 may be assigned to each.

St. Helena sound.—The proper defences cannot be pointed out till this sound shall have been surveyed.

Although there is supposed to be no great depth of water on the bar, it is known to be navigable by the smaller class of merchantmen, and to have a navigable communication with the head of Broad river, or Port Royal, intersecting the interior navigation between Charleston and Savannah. This sound will require defence, even should it not be of much use as a harbor of refuge for exterior commerce. \$150,000 may be the cost of the defences.

Broad River or Port Royal roads.—The value of this capacious roadstead, as a harbor of refuge, depends on the depth which can be carried over the bar, on the distance of this bar outside of the line of coast, and on the means which may be applicable of lessening the danger of crossing it. This is supposed to be the deepest bar of the southern coast. Should there prove to be water enough for frigates, and by light-houses on the shore, and lights, or other distinct guides, on the bar, should it be practicable to make the passage of the bar safe and easy, this road, situated within sixty miles of Charleston and twenty of Savannah river, intersecting the interior navigation between these great cities, thereby securing the arrival of supplies of every kind, would possess a very high degree of importance, not only as a harbor of refuge, but as a naval station also.

The survey of the exterior shoals, constituting the bar, should be made with the greatest care, and all possible minuteness. It is only when this shall have

been done that the true relation of this inlet to the rest of the coast can be known. and on this relation the position and magnitude of the required defences will depend. For the present, the estimate made by the engineer department is adopted, namely, \$300,000.

Savannah and mouth of Savannah river.—Mention has been made of the natural interior water communication along the coast of South Carolina. A similar communication extends south from the Savannah river, as far as St. John's, in East Florida. Owing to these passages, the city of Savannah, like Charleston, is liable to be approached by other avenues than the harbor or river; and its defences must consequently have relation to these lesser as well as the principal channels.

The distance from the mouth of Wassaw sound, or even Ossabaw sound, (both to the southwest of Savannah river,) to the city, is not much greater than from the mouth of the river; and an enterprise may be conducted the whole distance by water, or part of the way by water and part by land, from either or both. As in the case of like channels in the neighborhood of Charleston, it cannot now be determined where they can be defended most advantageously. It is to be hoped, however, that the localities will permit the defences to be placed near the outlets of the sounds; because the defences thus placed will serve the double purpose of guarding the city of Savannah and covering these harbors, which, in time of war, cannot but be very useful.

The defence of Savannah river is by no means difficult. A fort on Cockspar island, lying just within the mouth, and perhaps, for additional security, another on Tybee island, which forms the southern cape at the junction of the river with the ocean, would effectually prevent the passage of vessels up the channel, and cover the anchorage lying between Tybee and Cockspar. The existing Fort Jackson, standing about four miles below the city, should be maintained as a second barrier, both as respects the main channel and the passages which come into the river from the south; which last would not at all be controlled by works on Cockspar or Tybee. A fort projected for Cockspar island is estimated at \$470,000. To defend Tybee island may require \$150,000, and \$50,000 would put Fort Jackson in an efficient state, making a total of \$670,000. South of the Savannah are *Wassaw sound*, *Ossabaw sound*, *St. Catharine's sound*, at the mouth of the Medway river; *Sapelo sound*, *Doby inlet*, *Allamaha sound*, at the mouth of the great river of the same name; *St. Simond's sound*, at the mouth of Buffalo creek; *St. Andrew's sound*, at the united mouths of the Scilla and Santilla rivers; and *Cumberland sound*, at the mouth of the St. Mary's river. All these communications with the ocean are highly important, as regards the line of interior navigation, and several of them as affording access to excellent harbors. The last, especially, is known to be navigable by the largest sloops-of-war and merchantmen; and two or three of the others are believed to be but little, if at all inferior, either as regards depth of bar or safety of anchorage.

All these inlets are yet to be surveyed. Some of them are probably easily defensible by forts, and others may require the aid of floating defences. An important principle in relation to the defensive system of the whole southern coast, namely, that, on a coast possessing a few harbors, it is at the same time the more necessary to preserve them all for our own use, and the more easy to deprive an enemy of that shelter which is nearly indispensable to a continuous and close blockade. This principle is enforced as touching this particular part of the southern coast by the two following weighty considerations: its remoteness from the nearest naval rendezvous, the Chesapeake, which is on a mean 600 miles distant, and to leeward, both as to wind and current; and its being close upon the larboard hand, as they enter the Atlantic, of the great concourse of vessels passing at all seasons through the Florida channel.

While, therefore, this part of the coast from the concentration of vessels here is in great need of protection of some sort, naval aid can be extended to it only

with difficulty, and at the risk of being cut off from all retreat by a superior enemy.

Accurate and minute surveys which will enable our vessels, whether driven by an enemy or by stress of weather, to shun the dangers which beset the navigation of these harbors, and properly arranged defences to cover them when arrived, seem to be indispensable. It is worthy of remark, besides, that when these harbors shall be fortified the operation of investing the coast and watching the great outlet of commerce through Florida passage will be a difficult and hazardous one to an enemy, on whose part no perseverance or skill can avail to maintain an uninterrupted blockade, or to avoid the occasional shipwreck of his cruisers; while on the part of our small vessels-of-war and privateers the same sort of supervision will at all times be easy and safe.

Nothing better can be now done than to assume \$200,000 as the average cost of defending each of the nine entrances, giving a total of \$1,800,000.

The board of engineers have not examined the coast from the mouth of the St. Mary's to Pensacola, but in order that the chain of defence for the coast may be here exhibited unbroken, the estimates of the engineer department for the places and positions intermediate between Cumberland sound and Pensacola will be inserted. St. Augustine, \$50,000; Key West and Tortugas, \$3,000,000; Charlotte harbor, Espiritu Santa bay, Apalachicola, Apache bay, St. Joseph's bay, St. Rosa bay, together, \$1,000,000.

GULF OF MEXICO FRONTIER.

The resemblance of this part of the coast to that which we have denominated the southern section is striking. We may, indeed, refer to the description herein given of the principal features of the latter as a true delineation of this. In respect to the relation of the coast to the interior, there is, however, the greatest difference between these two portions of the maritime frontier; for while about eight-tenths of the whole territory of the United States is in one sense tributary to a part only of the Gulf of Mexico portion, in the southern section of the coast not more than one-tenth is connected with the seaboard by any natural ties. This fact, which shows the very deep interest which a large portion of the people and the government have in the security of this portion, is related to other facts which hardly leave an alternative as to the mode of attaining that security.

From the relative geographical position of this part of the coast, and the country interested in its safety; from the unhealthiness of the climate, nature of the adjacent country, and mixed character of the inhabitants, it will be some time before that portion, within supporting distance, whose welfare may be endangered by an enemy will, from peculiar circumstances, be competent of itself to sustain the assaults of an exterior foe. Upon the Atlantic seaboard the Alleghanies crowd the people upon the coast, and surround every alarm post of the frontier with a more and more dense population; and the ocean and the interior parallel communication transmit rapid aid to the right and left, while the coast of the Gulf, weak in itself and remote from succor from behind, is almost inaccessible to lateral assistance.

Those reasons, therefore, which tend to establish the necessity of an organized, a permanent, and a timely system of defence for the whole seaboard of the United States (some of which were advanced in the commencement of this communication) will apply to this part of it with a peculiar force so long as any portion of its system of defence is incomplete.

It has already been observed that the board of engineers have made no examination between Cumberland sound, in Georgia, and Pensacola. There are, however, along that shore and in the Florida reef several very important harbors which must be accurately surveyed.

Pensacola bay.—The upper arms of this considerable bay receive the Yellow-water or Pea river, Middle river, and Escambia river; and while the tributaries of the last, interlocking with branches of the Alabama and the Chattahoochie, seem to mark the courses whereby, at some future day, canals will convey a part of the products of these rivers to Pensacola, the face of the whole region is remarkably adapted to the application of railroads.

Santa Rosa sound extends eastward from the lower part of this bay into Santa Rosa bay. On the west the lagoons of Pensacola, Perdido, and Mobile bays, respectively, interlock in such a manner as to require but a few miles of cutting to complete a navigable channel from the first to the last-named bay, and thence through an existing interior water communication to the city of New Orleans.

Pensacola bay has rare properties as a harbor. It is accessible to the largest class of sloops-of-war and to small frigates, and under favorable circumstances will admit even large frigates; and there is reason to hope that the bar may be permanently deepened.

The bar is near the coast, and the channel through it is straight and easily hit.

The harbor is perfectly land-locked, and the roadstead very capacious. There are excellent positions within it for repairing, building, and launching vessels, and for docks and dock-yards, in healthy situations. The supply of good water is abundant. It is perfectly defensible. These properties, in connexion with the position of the harbor as regards the coast, have induced the government to fix upon it as a naval station and place of rendezvous and repairs.

An excellent survey has been made of the bay of Pensacola, sufficing to form the scheme of defence, while no other objects were sought than the security of the town and harbor. Regarded, however, as a naval station and place of rendezvous and repairs, further surveys, extending a greater distance from the shores, delineating accurately the face of the country and showing the several avenues by land and water are found to be necessary.

The defences of the water passage, as projected, are nearly completed, \$210,000 being asked to finish them. A further water defence at the position of the Barrancas, and the works that are indispensable to cover the navy yard from a lateral attack through the western bays—the latter requiring the further surveys above mentioned—are not yet planned. The Barrancas work may be taken at \$100,000, and the others at \$300,000, making a total for Pensacola of \$610,000.

Perdido bay.—This bay is intimately related to Pensacola and to Mobile bays, both as regards security and intercommunication, and should be carefully surveyed, with a view to these objects. It must be fortified, and the cost may be \$200,000.

Mobile bay.—The plan of defence for this bay comprised a fort at Mobile Point, which has been finished; another on Dauphin island, and a tower at the Pass au Heron. The estimates for the two last named amount to \$905,000.

New Orleans and the delta of the Mississippi.—The most northern water communication between the Mississippi and the Gulf is by the passage called the Rigolets, connecting Lake Borgne and Lake Pontchartrain. The next is by the pass of Chef Menteur, also connecting these lakes. Through these passages an enemy entering Lake Pontchartrain would, at the same time that he intercepted all water communication with Mobile and Pensacola, be able to reach New Orleans from the southern shore of the lake, or might continue onward through Lake Maurepas, Amite river, and Iberville river, thereby reaching the Mississippi at the head of the delta; or, landing within the mouths of Chef Menteur, he might move against the city along the ridge of the Gentilly road.

To the southwest of Chef Menteur, and at the head of Lake Borgne, is Bayou Bienvenu, a navigable channel, (the one pursued by the English army in the last war), not running into the Mississippi, but possessing shores of such a nature as to enable troops to march from the point of debarkation to the city. A little

to the south of this is Bayou Dupre, also affording easy access to the city. The avenues just named are defended by a fort at the Rigolets; another at Chef Menteur; another at Bayou Bienvenu, and a tower at Bayou Dupre.

The defences of the river are placed at the Plaquemine turn, the lowest position which can be occupied. Fort Jackson is on the right shore, and Fort St. Philip a little lower down, on the left: this last work must be repaired or renewed. The expense is estimated at \$117,000.

The only permanent work required at present, west of the Mississippi, is a fort to occupy Grand Terre island, for the purpose of defending the entrance to Barrataria bay, an excellent harbor for a floating force guarding the coasting trade on that side, and whence there are several passages leading to the Mississippi, near New Orleans. The estimate for this work is \$400,000.

Before leaving this part of the subject, it is necessary to advert to the important uses which may be made of movable floating defences in aid of fortifications.

The applications of this auxiliary force along the coast of the United States may be very numerous, and, as has been before remarked, would, in certain cases, be requisite to attain full security for all the objects needing protection. In the case we have just been considering, for example, fortifications will enable us to protect New Orleans, even from the most serious and determined efforts of an enemy; but, owing to the great width of the passages, we cannot, by fortifications alone, deprive an enemy of good exterior anchorages, especially the very excellent one west of Chandeleur island, nor entirely cover the interior water communications between the Rigolets and Mobile. We must, therefore, either quietly submit to all the annoyance and injury which an enemy in possession of these passages may inflict, or avert them by the timely preparation of a floating force, adapted to their peculiar navigation, and capable, under the favorable shelter of the forts, of being always on the alert, and of assuming an offensive or defensive attitude, according to the designs, conduct, or situation of the enemy. As these means of defence are, however, secondary to fortifications, in every sense; as the extent to which they may be needed must depend on the relation of our naval force to that of other powers—a relation continually varying as the shapes which these auxiliaries are to assume—the materials of which they are to be formed, the weapons they are to use, the agent which is to give them power, are points on which every ten years of this age of rapid improvement in the arts may effect complete revolutions, it is considered premature to go into details, and premature to go into expense.

From the preceding sketch of the system projected for the defence of the seaboard of the United States, it appears that all the fortifications proposed are not of the same pressing necessity, nor of like importance. Some are required immediately, while the commencement of others may be postponed. In proceeding to class them, it must be observed that the works of the first class are those destined to prevent an enemy from forming a permanent or even a momentary establishment in the country, those which will defend the great naval arsenals, and those which will cover the chief cities and towns.

In the second class will be placed the works which are to defend those naval stations and those cities of a secondary rank, which, either from natural or artificial defences, existing works, &c., are not entirely without protection, and may, therefore, wait until the more important points are secured against a first attack; and in the third class will be arrayed the works which complete the defensive system in all its parts, but of which the construction may, without great danger, be deferred until the frontier shall have received all the successive degrees of strength resulting from a gradual erection of the forts of the first and second classes. A fourth class is added, containing such works as will be necessary only conditionally.

Table A, joined to this report, contains the first class, and shows that the

works of this class will cost \$11,609,444; will require 2,585 men to garrison them in time of peace, and 30,966 in case of siege.

Table B contains the works of the second class, showing that they will cost \$5,873,000; will require 975 men to garrison them in time of peace, and 10,680 in case of siege.

Table C contains works belonging to the third class, showing that their cost will be \$14,078,824; that their garrisons in time of peace will amount to 2,380 men, and in time of siege to 21,745 men; showing, also, that the total future expense of fortifying the maritime frontier will amount to \$31,561,268; the troops necessary to guard these fortifications in time of peace to 5,940 men, and 63,391 men in time of war, supposing them all (which cannot happen) besieged at once.

The time required to construct the whole system must depend upon the annual appropriation which the nation may grant to this branch of the public service. All that need be said on the subject is, that in an undertaking necessarily involving so much time, and of such vital importance to the safety, prosperity, and greatness of the Union, there should be no relaxation of effort and perseverance. An undertaking of such magnitude must, with every effort, be the work of years. But it may be too much hurried as well as too much delayed. There is a rate of progress at which it will be executed in the best manner and at the minimum cost. If more hurried, it will be defective in quality and more costly if delayed.

France was, at least, fifty years completing her maritime and interior defences.

Some remarks will now be offered on the subject of the expense of erecting a system of defensive works, and garrisoning them for war, comparing it with the expense of defending the coast without fortifications. To simplify the proposition, the defence of Portsmouth, Boston, Narraganset roads, New York, Philadelphia, Baltimore, Norfolk, Charleston, Savannah, and New Orleans, only, will be taken.

Supposing an enemy had concentrated 20,000 men at Halifax or Bermuda: the government must, on hearing of this force, at once prepare to resist it at all the points mentioned above. As it will be impossible to foresee on which the first blow will be struck, it will be necessary to have troops encamped at each; and to meet the attack with a force not less numerically than that of the assailant, the troops kept constantly under arms must, at least, equal one-half of the hostile expedition, while as many more, ready for instant service, must be within call. These points are so immediately accessible in some cases, and so remote from succor in others, that, after the point of attack is announced by the appearance of the enemy before it, there will be no time for re-enforcements to come from the interior.

By manœuvring in front of any of these places the enemy would induce us to concentrate forces there; when, suddenly profiting of a favorable breeze, he would sail to another, which he would reach in a few hours, and would not fail to seize if a force were not stationed there likewise, at least, equal to his own. No re-enforcement can, in this case, arrive from the interior in time, for all the troops under march would have taken up a direction upon the point he has just quitted.

Our whole coast from Maine to Louisiana would thus be kept in alarm by a single expedition; and such is the extent and exposure of the seaboard that an enemy might ruin us by a war of mere threatenings. If the cities and other great establishments are not garrisoned, they will become a prey at once; and if they are garrisoned, the treasury will be gradually emptied; the credit of the government exhausted; the weary and starving militia will desert to their homes; nor will it be easy to avert the consummation of tribute, pillage, and conflagration.

The table E, joined to this report, shows that, to be in readiness on each of these vulnerable points, it will be requisite to maintain 107,000 men encamped

and under arms at the ten places mentioned, and 93,000 men ready to march and within call.

This number is, in fact, below that which would be required; for these points being, according to our hypothesis, exposed to an attack from 20,000 regular and disciplined troops, 20,000 militia would not be able to repel them unless aided by entrenchments, requiring a time to construct them, which might not be allowed, and involving expenses which are not included in the estimate. Besides, to have 20,000 men, especially new levies, under arms, it will be necessary, considering the epidemics that always assail such troops, to carry the formation of these corps to at least 25,000 men.

The State of Louisiana, being remote from succor, requires a larger force under arms than the other points; this force is fixed at 17,000, supposing that the State may supply 3,000 within call.

All expenses being reckoned, 1,000 regular troops, including officers, cost \$300,000 per annum, or \$150 per man, for a campaign of six months. 1,000 militia, including officers, cost \$400,000 per annum, or \$200 per man, for a six months' campaign. But, taking into consideration the diseases which invariably attack men unaccustomed to military life, and the consequent expense of hospital establishments; the frequent movement of detachments from the camp to their homes, and from the interior to the camp; and the cost of camping furniture, utensils, accoutrements, &c., which is the same for a short campaign as for a year; regarding all these things, the cost of militiamen cannot be reckoned at less than \$250 per man for six months.

The 107,000 militiamen necessary to guard the above-mentioned points, the maritime frontier being without defence, will therefore cost, in a campaign of six months, \$26,750,000. In strict justice there should be added to this expense, which is believed to be much understated, amongst other things, the loss of time, and the diminution of valuable products resulting from drawing off so considerable a portion of efficient labor from its most profitable pursuits. This, besides being a heavy tax on individuals, is a real loss to the nation.

It would be utterly vain to attempt an estimate of the loss to the nation from the dreadful mortality which rages in the camps of men suddenly exposed to the fatigues and privations of a military life.

The total expense of constructing the fortifications at the ten places before mentioned will amount to \$21,767,656.—(See table E.)

The garrisons of these fortifications may consist of the same number of regular troops in time of war as in time of peace; the remainder being furnished by the militia held in readiness to throw themselves into the forts on the first appearance of an enemy. By this arrangement 3,010 regulars and 32,076 militia, either within the works or in small corps on advantageous positions, making in all 35,086 men, would suffice; 64,914 men being kept in readiness to march when called upon.

We should, therefore, have only 35,086 to pay and support instead of 107,000, and the expense would be \$8,430,500 instead of \$26,750,000. The difference, namely, \$18,319,500, being only \$3,448,156 less than the whole cost of these defences. It follows that the expense of their erection would be nearly compensated by the saving they would cause in a single campaign of six months.

It is proper to add that, although the expense of these works will be great, that expense is never to be renewed; while with troops, on the contrary, the expense is annually repeated, if not increased, until the end of the war. Besides, the disbursements for fortifications are made in time of peace, slowly and to an extent exactly correspondent with the financial resources of the country. Armies are most wanted, and must be paid, in periods of the greatest emergency, when the ordinary sources of revenue are dried up, and when the treasury can only be supplied by a resort to means the most burdensome and disagreeable to the people.

The defence of the maritime frontier by permanent fortifications, and the disbursements for their construction, will thus tend to a real and positive economy.

The vulnerable points being reduced to a small number, instead of waiting an attack on every point, and holding ourselves everywhere in readiness to repel it, we shall force an enemy to direct his assaults against those few which, being well understood by us, will, of course, have received timely preparation. There can be no doubt that such a state of things will make an adversary more reluctant to risk his expeditions; and, therefore, that we shall not only be better able to resist, but also less frequently called on to do so.

Some prominent military writers have opposed the principle of fortifying an extensive land frontier, but none have ever disputed the necessity of fortifying a maritime border; the practice of every nation, ancient and modern, has been the same in this respect. On a land frontier a good, experienced, and numerous infantry may, in some cases, dispense with fortifications, but though disciplined troops may cover a frontier without the aid of fortifications, undisciplined troops cannot. On a maritime frontier, however, no description of troops can supply the place of strong batteries disposed upon the vulnerable points. The uncertainty of the point on which an enemy may direct his attack, the suddenness with which he may reach it, and the powerful masses which he can concentrate at a distance out of our reach and knowledge, or suddenly, and at the very moment of attack require that every important post be prepared to repel his attempt, or retard it until re-enforcements can arrive and adequate means of resistance be organized. By land we are acquainted with the motions of an enemy, but the ocean is a vast plain, without obstacle, where his movements are made out of our sight, where no trace is left of his path, and where we know nothing of his approach until he is within reach of the eye. In a word, unless the vulnerable points of a seaboard are covered by fortifications their only chance of safety must depend on the issue of a battle, always uncertain, even when the best disciplined, most experienced, and best appointed troops have made all possible preparation for the combat.

As for the garrisons which these forts will require in time of war, a small portion, about equal in number to the peace garrisons, should be of regular troops, the remainder of militia, practiced in the manœuvres and drill of great guns; it being indispensable that the greatest part of the troops required for the defence and service of the sea-coast fortifications should be of artillery.

This brings us to a suggestion or two in relation to the organization of the militia forces. Instead of the present small proportion of artillery allowed in the militia organization, the States might, with great advantage, increase the proportion of that force in the vicinity of each of the exposed parts of the coast, so as to be equivalent to the exigencies and armament of the works; substituting for the usual field exercises as infantry actual drill and practice in the batteries. The number of militia artillery in each case would be determined by the number of guns applied to the defence of that particular place. As soon as a movement on the part of the enemy should threaten the frontier of the State this force should throw itself into the forts, and there remain so long as the precise point of attack should be undetermined. In most parts of the seaboard it would be advisable to have also a considerable body of militia horse artillery, as being a very useful arm in all cases, and as affording a defence always applicable against minor and predatory enterprises. This force might, in part, be drawn from the ordinary proportion of cavalry.

If, with our general system of permanent fortifications and naval establishments, we connect a system of interior communication by land and water, adapted both to the defence and to the commercial relations of the country; if to these we add a well constituted regular army, and a militia perfect in its organization, the nation will not only secure its territory from invasion and insult, but will

preserve its institutions from those violent shocks and revolutions which have so frequently, in every age and in every country, been incident to a state of war.

Tables A, B, C, and D, following, contain the works constituting the proposed defensive system for the maritime frontier, arranged in four classes.

Table E exhibits a comparison of the cost of defending certain important parts of the coast without fortifications, and with the aid of the projected works.

Table F shows a possible concentration of militia forces in eleven days at Boston, Newport, R. I., New York, Philadelphia, Baltimore, Norfolk, Charleston, S. C., Savannah, Georgia, and New Orleans.

NORTHERN FRONTIER.

Not having been the subject of particular care and study, it is with diffidence that a few words are thrown out on the subject of the defence of the frontier which separates the United States from the English possessions.

The first questions that arise are these: Is the political condition of the country lying on the other side of the country in question, viz: the condition of colonies of a trans-Atlantic power to remain altered? Or are these colonies to become independent nations? Or is any other important change to be wrought in their political relations? These questions bear directly upon the matter in hand. A generation hence and there may be no more room for jealousy and watchfulness along that line than there now is along the imaginary lines which separate our contiguous States. Within the same period the Canadas may have assumed the attitude of independent and separate States; and, although the United States may recognize in these northern neighbors a youth of much promise and vigor, the period when the relative increase shall have been such as to make their proximity a source of much precaution and solicitude will not, probably, be near at hand. But though it may be possible that the colonial relations may be thrown off within the period for which it is our duty now to provide; and although in any other relation the United States might rely for security, at any moment, on the greater power which she might at any moment develop, can it be distinctly foreseen that the existing political connexion is to be soon dissolved? If not, if there be uncertainty on this point, does it become the duty of the United States to proceed at once to the task of securing herself on this frontier, regarding it as separating her from one of the most powerful empires of the earth? Or, finally, may she wait and watch, relying on her sagacity to give due notice of impending danger, and on her resources to supply her, in time, with appropriate armor? If it be, indeed, possible to apply, within a brief state of time, all the defences that can be needed on this frontier, the course last suggested would appear to be the best. What, therefore, is like to be the nature of the danger, and what the nature of the defence?

Along the St. Croix river only local establishments could require to be covered, as there are no objects of consequence to be reached by an enemy penetrating our interior from that border. Then comes the disputed territory and the great unsettled regions along the northern margins of New Hampshire and Vermont.

Upon all this extent of frontier the exact location of future establishments, of consequence, cannot be foreseen with the certainty warranting their being now provided for by permanent defensive works. This region is to become populous and wealthy; the natural means of communication are to be improved, and numerous artificial means of communication are to be opened by roads, canals, and railways; but while this growth in wealth may invite aggression, the growth in numbers, and the increased facilities of intercommunication, the increased power of rendering mutual succor, and of drawing aid from the interior, would, in a still greater degree, make aggression difficult and improbable.

Lake Champlain penetrates the territory in such a way that an enemy, having

the naval mastery, might make a deep inroad and greatly harass the country along the shores, although no enterprise, even in the present state of population, could be carried far into the interior. Were it only to relieve a long line of frontier from predatory incursions, access to this lake from the north should be denied. But there are other very strong reasons for this exclusion. By closing the lake at its northern extremity, an expensive and uncertain strife for naval superiority on this lake would be avoided, and the whole lake would remain in our possession, serving as the best possible military line of communication, in case the United States should assume offensive operations against the weakest point of the Canadian frontier.

From the northern end of this lake the forces of the United States should march into Canada and intercept the communication by the St. Lawrence, either at or near the mouth of the Richelieu river, at Montreal island, at some point where the ship channel of the river could be commanded, intermediate between these places, or at any two or at all these places, according to circumstances. Maintaining any or all these positions would limit the defence in the province above to the consumption of the means then in store, and would completely paralyze its offensive power. Although no other object were in view than the defence of the frontier upon the upper lakes, no effort necessary to secure and maintain this position should be spared, because it is only thus that the contest for naval superiority on the lakes, which, if once suffered to begin, is both exhausting and interminable, can be avoided.

Without aid from abroad, Canada cannot contest such a question with the United States; and, so long as the United States possess that superiority, the defence of the upper portion of the frontier will be complete.

From being the most expensive of all modes of defence, naval superiority in our hands may thus become the cheapest; two or three small armed vessels on each lake, employed as convoys to the ordinary navigation, and to the transports bearing troops and munitions being all that would be needed.

Military enterprises would, in this way, be warded off from the numerous rich and populous cities and towns now embellishing our border, which it would not be easy to protect from the calamities of war by mere military works, without running into great expense, were the enemy's naval means to allow his approaching them at his pleasure.

In the case of the offensive movement supposed above, the fortified position of Isle Aux Noix, and any other upon the Richelieu, should be at first left in rear, being reached or mastered by suitable bodies of troops, and should be subjected to immediate investment and vigorous attack, so as to be speedily reduced, and to open the navigable water communication within twenty miles of Montreal.

If the preceding remarks be well founded, it would appear that the peace and safety of the parts of the frontier extending along the river St. Lawrence, Lakes Ontario, Erie, Huron, and Superior, might be made to flow from military operations carried on against Canada, by the line of Lake Champlain and the river Richelieu; and in order to this military operation being always practical, and to be taken up at pleasure, nothing more is necessary than the fortification of the outlet of Lake Champlain. It might have been before remarked that the offensive movement in question is not deemed to be difficult or hazardous, nor would it be necessarily restricted to holding positions on the St. Lawrence; active operations against Quebec, to which this is the most convenient road, following as a matter of course upon these first successes.

The security, therefore, that may be obtained for the upper frontier by military operations on the lower, may at least justify these upper portions in waiting the progress of events.

The unexampled increase of population upon these very borders, the hundred new ways already finished or in hand, of connecting these borders with the heart of the country, may so elevate the military resources of the region that, in the

event of war, it will matter little in which of the political conditions first supposed the opposite territory may be found—a resistless torrent sweeping it from end to end; and, although it might not be prudent to rely in such a matter on the mere spread of wealth and numbers, we may be certain that there will exist ample resources to create all such artificial military aids as the circumstances may call for, and we may infer that the application of these aids would now be premature.

The military consequences of the occupation of the outlet of Lake Champlain are so obvious that it must not be supposed they are not perfectly understood by our neighbor across the border. As it would consequently be a great object with him to avert the consequences alluded to, he would, in the event of war, (often breaking out suddenly,) be first, if possible, in taking such a position as would prevent our commanding the issue of the lake; and hence it is that, in the preparation of the only permanent military work now recommended for the northern frontier, it seems advisable to admit no unnecessary delay.

A position for closing the lake, selected during the last war, and of which the fortification was begun soon after the peace, was found, after some progress had been made, not to lie within our territory, and was abandoned. There is, however, a position equally good close at hand, and in all respects admirably adapted to the object in view.

The fortification of this outlet will probably cost about \$600,000.

All of which is respectfully submitted.

TABLE A.—First Class,

Comprising works first to be executed, as covering partially or entirely great cities and important towns, naval establishments, roads of rendezvous, places and harbors that an enemy might occupy, outlets of valuable commerce, &c.; arranged in geographical order.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
THESE WORKS ARE IN PROGRESS.				
Fort Independence, Boston harbor	50	395	79	\$202, 852
Fort Warren, Boston harbor	100	1, 500	300?	695, 414
Fort Adams, Narraganset roads.....	100	2, 440	468	350, 000
Fort Schuyler, New York harbor	100	1, 250	250?	510, 178
Fort Columbus, New York harbor.....	100	535	207	20, 000
Fort Delaware, Delaware bay	100?	1, 250 ?	250?	1600, 000
Fort Monroe, Hampton roads.....	500	2, 450	350	210, 000
Fort Calhoun, Hampton roads.....	50	1, 160	232	531, 000
Fort Caswell, Cape Fear river.....	50	450	90	60, 000
Fort in Charleston harbor, South Carolina.....	100	1, 500	300	500, 000
Fort Pulaski, Savannah river.....	50	860	172	246, 000
Fort Pickens, Pensacola harbor.....	100	1, 260	252	50, 000
Fort on Foster's bank, Pensacola harbor.....	50	720	144	160, 000
<i>Maine.</i>				
Fort at the narrows of Penobscot.....	50	500	145	150, 000
Fort at the mouth of the Kennebec, not projected.....	50?	500 ?	150?	300, 000
Fort Preble, Portland harbor.....	50	300	82	155, 000

<i>New Hampshire.</i>				
Works in Portsmouth harbor, not projected	150?	1,500?	300?	750,000
<i>Massachusetts.</i>				
Fort Pickering, Salem harbor	50	250	50	174,000
Fort Winthrop, repairs, &c., Boston harbor	10	250	50	50,000
Works at Provincetown, not projected	50?	1,500?	300?	760,000
Works at New Bedford, not projected	50?	750?	150?	7300,000
<i>Rhode Island.</i>				
Fort on Rose island, Narraganset roads	25	580	96	123,000
<i>Connecticut.</i>				
Fort Griswold, New London harbor	50	830	106	198,000
<i>New York.</i>				
Fort on Wilkins's Point, New York harbor	50	1,336	184	686,000
Fort Tompkins and dependencies, New York harbor	50	970	114	654,000
<i>Delaware.</i>				
Works to cover the Delaware Breakwater harbor, not projected	100?	1,125?	225?	7600,000
Fort opposite Fort Delaware, on right bank	50	760	112	521,000
<i>Maryland.</i>				
Fort on Elk river, to cover the debouche of the Chesapeake and Delaware canal and railroad	50	760	112	300,000

TABLE A.—First Class, comprising works first to be executed, &c.—Continued.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
<i>Maryland.</i>				
Fort on Sollers's Point flats, below Baltimore	100	835	159	\$1,000,000
Fort on Point Patience, Patuxent river	50	400	80	246,000
<i>West Florida.</i>				
Works to protect the navy yard at Pensacola from lateral attack through the bays, not projected	50?	1,000?	50?	?300,000
Fort at Barrancas, Pensacola, not projected	50	250?	50?	?100,000
<i>Louisiana.</i>				
Fort St. Philip, Mississippi river	50	400	60	117,000
Fort at Grand Terre, Barrataria island	50	400	60	400,000
Total	2,585	30,966	5,729	11,609,444

TABLE B.—SECOND CLASS.

Comprising works to be constructed next after those of the first, the works having similar objects to defend as those of the first class, and being generally such as are necessary to complete the defence begun by the works of the first class; arranged in geographical order.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
<i>Maine.</i>				
Fort on House island, Portland harbor.....	25	260	53	\$48, 000
<i>Massachusetts.</i>				
Fort at Gloucester, not projected.....	50?	500?	100?	?200, 000
Fort at Naugus Head, Salem harbor.....	25	180	38	51, 000
Fort Sewall, Marblehead harbor.....	50	280	55	174, 000
Fort on Jack's Point, Marblehead harbor.....	25	280	60	144, 000
Fort and outworks on Nantasket Head, Boston harbor.....	100	1, 550	297	975, 000
Fort on Gurnet Point, Plymouth, not projected.....	25?	250?	50	?100, 000
<i>Rhode Island.</i>				
Works on Conanicut island, Narraganset roads.....	100	1, 800	386	1, 200, 000
<i>Connecticut.</i>				
Fort at Stonington harbor, not projected.....	50?	375?	75?	?200, 000
Fort Trumbull, New London harbor.....	50	460	62	116, 000

TABLE B.—SECOND CLASS, comprising works to be executed next after those of the first, &c.—Continued.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
<i>Maryland.</i>				
Fort on Hawkins's Point, below Baltimore.....	100	845	121	\$376, 000
Fort McHenry, Covington battery, Redoubt Wood, repairs, &c., renewals.....	50	500	100	1150, 000
Fort on Thomas's Point, Patuxent river.....	25	350	70	259, 000
Fort on Cedar Point, Potomac river, not projected.....	50?	550	110?	1300, 000
<i>South Carolina.</i>				
Works in Port Royal roads, not projected.....	50?	550?	110?	1300, 000
<i>Georgia.</i>				
Fort on Tybee island, not projected.....	25?	300?	75?	1150, 000
Repairs on Fort Jackson, Savannah river, not planned.....	25?	200?	30?	1 50, 000
Works to command the entrance to Cumberland sound, mouth of St. Mary's river, Georgia, not projected.....	50?	550?	110?	1200, 000
<i>Alabama.</i>				
Fort on Dauphin island, Mobile bay.....	100?	900	128	880, 000
Total.....	975	10, 680	2, 030	5, 873, 000

TABLE C.—THIRD CLASS.

Comprising the defence of all towns, harbors, inlets, &c., not included in the first two classes; arranged in geographical order.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
<i>Maine.</i>				
Works at Eastport, mouth of St. Croix	25	250	50	\$100,000
Works at Machias harbor.....?	25	250	50	100,000
Works at Mount Desert island	50	1,000	200	500,000
Works at Castine	10	125	25	50,000
Works at St. George's bay, Broad bay, Damariscotta bay, and Sheepscot bay.....	100	1,000	200	400,000
Works in Hog Island channel, Portland harbor .....	.....	.....	.....	135,000
Works at the mouth of the Saco, at the mouth of the Kennebunk, and at York. ?	25	100	30	75,000
<i>Massachusetts.</i>				
Works at Newburyport	25	250	50	100,000
Works at Beverly	10	125	25	50,000
Rebault on Hog island, Boston harbor, projected	25	150	21	43,000
Reducing depth of water in Broad Sound passage.....	.....	.....	.....	210,000
Reducing altitude of Gallop's island.....	.....	.....	.....	3,000
Works at Nantucket harbor, Edgartown harbor, Falmouth harbor, Holmes's Hole, and Tarpaulin cove	50	625	125	250,000
<i>Rhode Island.</i>				
Repairs and modification of old Fort Wolcott, Newport harbor	50	250	45	80,000
Repairs and modification of old Fort Greene, Newport harbor .....	.....	50	8	20,000
Closing west passage of Narraganset roads .....	.....	.....	.....	307,000

TABLE C.—THIRD CLASS, comprising the defence of all towns, harbors, inlets, &c.—Continued.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
<i>New York.</i>				
Works at Gardiner's bay	50	750	150	\$400, 000
Works at Sag Harbor	25	250	50	100, 000
Fort Wood, New York harbor, repairs	25	225	45	80, 000
Fort Gibson, New York harbor, repairs	25	100	14	50, 000
Fort on Middle Ground shoal, New York harbor, projected	100	1,760	342	1,681,412
Fort on East Bank shoal, New York harbor, projected	100	1,760	332	1,681,412
<i>Connecticut.</i>				
Works at the mouth of Connecticut river	25	250	50	100, 000
Fort Hale, New Haven harbor, projected	10	220	30	48, 000
Fort Wooster, New Haven harbor, projected	10	155	16	42, 000
Works for defence of several harbors and towns between New Haven and New York, on both sides of the sound	50	500	100	200, 000
<i>Maryland.</i>				
Works at St. Mary's river	50	550	110	300, 000
Works at Annapolis harbor	50	500	100	250, 000
<i>North Carolina.</i>				
Fort on Baldhead island, Cape Fear river, projected	50	450	90	180, 000
Redoubt on Federal Point, Cape Fear river, projected	25	200	43	18, 000

<i>South Carolina.</i>					
Works at Georgetown harbor	50	500	100	250,000	
Works at the mouth of the Santee, at Bull's bay, and other inlets between Georgetown and Charleston					
Works at Stono inlet	25	250	50	100,000	
Works at North Edisto inlet	10	125	25	50,000	
Works at North Edisto inlet	10	125	25	50,000	
Works at South Edisto inlet	10	125	25	50,000	
Works at St. Helena sound	50	375	75	150,000	
<i>Georgia.</i>					
Works at Wassaw sound	50	500	100	200,000	
Works at Ossabaw sound	50	500	100	200,000	
Works at St. Catharine's sound	50	500	100	200,000	
Works at Sapelo sound	50	500	100	200,000	
Works at Doby inlet	50	500	100	200,000	
Works at Altamaha sound	50	500	100	200,000	
Works at St. Simond's sound	50	500	100	200,000	
Works at St. Andrews's sound	50	500	100	200,000	
<i>East and West Florida.</i>					
Works at St. Augustine, (estimate of engineer department)	25	100	20	50,000	
Works at Key West and Tortugas, (estimate of engineer department)	500	2,500	500	3,000,000	
Works at Charlotte harbor, Espiritu Santa bay, Apalachicola, Apalache bay, St. Joseph's bay, and St. Rosa bay, (estimate of engineer department)	250	1,250	250	1,000,000	
<i>Alabama.</i>					
Works at Perdido bay	50	500	100	200,000	
Tower at Pass au Heron, projected	10	60	12	25,000	
Total	2,380	21,745	4,283	14,078,824	

Recapitulation of Tables A, B, and C.

Designation of works.	Garrison.		Guns, &c.	Cost to complete.
	Peace.	Siege.		
First class, from table A.....	2,585	30,966	5,729	\$11,609,444
Second class, from table B.....	975	10,680	2,030	5,873,000
Third class, from table C.....	2,380	21,745	4,283	14,078,824
Total.....	5,940	63,391	12,042	31,561,268

TABLE D.—FOURTH CLASS,

Comprising conditional works, the necessity for which will depend on the creation of artificial harbors, canals, great naval depots, &c.; arranged in geographical order.

Works on Barnstable bay to cover Cape Cod canal.

Works on Buzzard's bay to cover Cape Cod canal.

Works to cover artificial harbor in Martha's Vineyard sound.

Works on Newport News, on Craney island, and on Nasaway shoals, to cover naval depot in Burwell's bay.

Works to cover proposed new outlet of Albemarle sound.

TABLE E.

Exhibiting the cost of certain projected fortifications for the sea-coast defence; the forces necessary to protect them on the supposition that there were no fortifications; the forces necessary for perfect security with the aid of the projected defences; and the expense of the troops in both cases.

Places.	Aggregate cost of the proposed works.	Comparison of the forces necessary to defend the places with and without the projected works.						Expense of the troops kept under pay without fortifications. ^a	Expenses of the troops kept under pay with the proposed works.		
		No. of troops necessary without fortifications.		No. of troops required with the projected works.		Militia.	Expense of the regulars for six months, at \$150 per man.		Expense of the militia for six months, at \$250 per man.	Expense of regulars and militia.	
		Under pay.	Within call.	Under pay.							Within call.
				Regulars.	Militia.							Total.
Portsmouth	\$500,000	10,000	10,000	150	1,500	1,650	8,350	\$2,500,000	\$22,500	\$375,000	\$397,500
Boston	2,123,575	10,000	10,000	285	3,845	4,130	5,870	2,500,000	42,750	961,250	1,004,000
Narragansett roads	3,042,369	10,000	10,000	275	5,125	5,400	4,600	2,500,000	41,250	1,281,250	1,322,500
New York	6,077,365	10,000	10,000	500	8,206	8,706	1,294	2,500,000	75,000	2,051,500	2,126,500
Philadelphia	1,121,000	10,000	10,000	150	2,010	2,160	7,840	2,500,000	22,500	502,500	525,000
Baltimore	1,516,000	10,000	10,000	250	2,180	2,430	7,570	2,500,000	37,500	505,500	542,500
Norfolk	3,869,025	10,000	10,000	550	3,610	4,160	5,840	2,500,000	82,500	902,500	985,000
Charleston	824,426	10,000	10,000	300	1,500	1,800	8,200	2,500,000	45,000	375,000	420,000
Savannah	732,367	10,000	10,000	200	1,360	1,560	8,440	2,500,000	30,000	340,000	370,000
New Orleans	961,529	17,000	3,000	350	2,740	3,090	6,910	4,250,000	52,500	685,000	737,500
Total	21,767,656	107,000	93,000	3,010	32,076	35,086	64,914	26,750,000	451,500	7,979,000	8,430,500

Total number of troops necessary without fortifications..... 200,000

Total number of troops required with the projected works 100,000

^a Supposing all to be militia, serving six months, and costing in the average \$250 per man.

TABLE E, *exhibiting the cost of certain projected fortifications, &c.*—Continued.

Expense of defending the above-mentioned points during a campaign of six months without fortifications	\$26, 750, 000
With the projected forts	8, 430, 500
Difference	18, 319, 500
Total cost of the projected works	21, 767, 656
Difference	3, 448, 156

N. B.—In one campaign of six months the difference of expense between the two systems will amount to within \$3,448,156 of the whole cost of the projected works. The expense of the troops as above supposes the regular soldier to cost \$300 per annum, and the militia soldier \$500, officers included in both. No estimate can be made of the enormous contingent expenses in assembling, organizing, and providing militia forces, of hospitals, waste of property, loss of time, &c. This estimate is undoubtedly below the truth. The forces under pay necessary for defence, with the proposed works, consist of peace garrisons, increased by a proportion of militia, the residue of militia under pay being stationed upon the line of approach of the enemy.

TABLE F.

Exhibiting the amount of militia force that may be concentrated at Boston, Newport, New York, Philadelphia, Norfolk, Baltimore, Charleston, Savannah, and New Orleans, successively, from the 1st to the 11th day; each day's march being computed at fifteen miles; founded on the census of 1830.

Days.	Boston.	Newport, R. I.	New York.	Philadelphia.	Norfolk, Va.	Baltimore, Md.	Charleston, S. C.	Savannah, Ga.	New Orleans.
1.....	5,422	1,397	20,218	26,132	1,864	10,046	2,513	1,173	3,032
2.....	28,351	2,373	28,131	26,521	2,880	18,042	7,160	3,960	7,836
3.....	34,138	12,340	44,123	35,450	4,416	21,266	9,475	5,948	8,716
4.....	39,561	17,143	57,925	69,101	7,608	27,916	14,601	6,588	12,499
5.....	49,127	33,221	59,438	70,806	11,101	31,897	18,443	9,263	14,474
6.....	59,893	42,807	81,252	127,665	14,511	49,648	22,490	19,725	17,339
7.....	81,867	61,335	104,180	154,036	20,699	65,382	24,393	21,903	17,906
8.....	97,697	65,583	137,048	167,703	28,039	77,543	29,416	25,220	22,561
9.....	111,655	83,111	152,841	195,265	32,562	78,164	40,835	36,630	26,433
10.....	125,326	109,268	164,116	219,983	36,446	87,520	45,582	41,345	28,140
11.....	144,076	130,824	191,353	221,603	45,549	101,970	59,701	60,422	31,647

ORDNANCE OFFICE, *Washington, March 8, 1836.*

SIR: The resolution of the Senate referred, on the 25th ultimo, to this office, has been duly considered, and, in answer, I have the honor to transmit the following report:

1. IN RELATION TO ARMORIES.

For reasons fully set forth in the letter to you from this office of December 28, 1832, (and as will also appear on reference to the report of Hon. R. M. Johnson, chairman of the military committee, of March 18, 1834,) it is the opinion of this department that, with a view to keep pace in some measure with the rapid increase of the militia, and the consequent demand for arms, there should be established at least one additional armory, to be located at the most eligible point west of the Alleghany mountains.

In a country like the United States, where the population is spread over a territory of great extent, the delay necessarily attending the transportation of arms to distant sections may at times materially affect the public interest; it is therefore suggested that, if two additional armories are deemed necessary to meet the exigencies of the country, one should be provided in the west and one in the south Atlantic States. Including those now at Springfield and Harper's Ferry, there would then be four national armories, two for the Atlantic States and two for the west; that is, if Harper's Ferry may be considered sufficiently near the western States to furnish their supplies by means of the proposed extension of the Chesapeake and Ohio canal.

Two additional armories are therefore estimated for, at \$525,000 each—\$1,050,000.

This estimate is based on the report of the commissioners, dated January 12, 1825, who were appointed under the authority of an act of Congress, passed March 3, 1823, entitled "An act to establish a national armory on the western waters," and directed to explore the western country with a view to the selection of a suitable site.

2. IN RELATION TO ARSENALS.

It has been urged upon the department by many whose opinions demand consideration, that every State should have an arsenal or depot of arms and munitions within its territorial limits. Should this opinion prevail, and be carried into effect by legislative authority, it would be necessary to construct fourteen arsenals or depots, including the one proposed for the State of North Carolina, for which a bill has been reported by the military committee of the House of Representatives.

A prominent advantage to the public interest in the establishing of these depots consists in their use for the safe-keeping of arms issued to the States, under the law of Congress, passed in 1808, "for arming the whole body of the militia," to be held subject to the orders of their several governors, which would insure their being always available in any emergency.

Some additions may be required, from time to time, at the arsenals already established, which, with the cost of the fourteen above mentioned, are estimated at \$1,746,000.

This estimate is founded on the supposition that the new arsenals are to be, on an average, of a medium extent, when considered in relation to those already established, which are divided into four classes, as may be seen by reference to a tabular exhibit presented herewith. It would be proper to arrange every new depot in such manner as to admit of its increase or extension in case the public service should require it. It could then be passed from one class to a higher by the addition of such buildings, tools, or machinery as the case might demand.

3. IN RELATION TO FIELD ARTILLERY.

It is estimated that an adequate supply of field artillery for arming the militia and for troops in service, to be provided within ten years, will amount to 926 pieces, which, with their carriages, implements, and equipments, will cost about \$576,175.

This estimate is based on the principle stated in the report before mentioned, and contemplates a supply proportionate to the ratio of the increase of the militia, one piece of artillery being allotted to every 2,000 men.

4. IN RELATION TO ORDNANCE AND ORDNANCE STORES REQUIRED FOR ARMING THE FORTIFICATIONS.

Agreeably to data derived from two statements received from the engineer department on the 11th of January and 27th of February last, it is estimated that the expense of procuring the necessary ordnance and ordnance stores for the full and entire armament of the forts which are erected, together with those now building, and others which are contemplated to be built hereafter, embracing cannon, carriages, implements, and equipments complete, and ammunition, after deducting therefrom the quantity of similar munitions now on hand, will amount to about \$17,840,249.

This estimate is founded on the supposition that 12,116 pieces of cannon, with 200 rounds of ammunition for each gun, will be ultimately required when all the forts projected shall have been completed.

It should be stated, however, that this sum may be considered partly conjectural, the plans for the defence of many of the harbors being not yet matured by the board of engineers, as it appears by a letter from the chief of that department, dated February 27 last. There are likewise many other points along the coast which may require defences, the cost of the armament for which has not been embraced in this estimate, nor does it contain any item for the defence of the Mexican frontier.

5. IN RELATION TO SMALL ARMS.

To progress with the arming of the militia to a reasonable extent, in accordance with the settled policy of the country and its civil institutions, a considerable addition should be made to the number of arms on hand. Having reference to the annual increase of citizens who may be called to bear arms, there will be required for the next ten years an expenditure of \$7,721,233 for muskets, rifles, and pistols, and \$321,880 for swords—total, \$8,043,113.

This last sum is found by allotting five swords to every one hundred muskets, or their equivalent in other fire-arms.

6. IN RELATION TO ACCOUTREMENTS FOR SMALL ARMS.

Fifty thousand sets of accoutrements would cost \$200,000.

This number distributed among the several arsenals would afford an adequate supply for any emergency; and being in some degree perishable, it is not considered advisable to provide a greater quantity, as they can be made at short notice, or as occasion may require.

7. IN RELATION TO FIELD AMMUNITION OF ALL KINDS.

The expense of providing a supply of gunpowder, cartridge paper, and other materials for field service, is estimated at \$200,000.

This amount would afford at all times a supply of ammunition for 30,000 men in each of the principal divisions of the country.

The foregoing statements comprise all the estimates for the ordnance department, except for a national foundry. The amount required for such an establishment will not exceed \$300,000, which sum includes the cost of materials to be consumed in casting guns during the first year after commencing operations. The period of ten years is taken as a suitable time within which the foregoing expenditures may be completed.

The disbursements for the various objects embraced in the resolution which pertain to the ordnance department are now, annually, little short of \$1,000,000. If a period of fifteen years is assumed for the accomplishment of these purposes, the annual expenditure will be only double what it is at present, and it is believed that such an increase could be made with much advantage to the service. Indeed, that portion of expense which pertains to the manufacture of cannon and projectiles could annually be more than quadrupled with safety and a due regard to economy.

Recapitulation.

2 national armories	\$1, 050, 000
14 arsenals	1, 746, 000
926 pieces of field artillery, with carriages, &c.	576, 175
Ordnance and ordnance stores, and ammunition for fortifications.	17, 840, 249
Small arms and accoutrements	8, 243, 113
Ammunition for field service	200, 000
A national foundry	300, 000
	<hr/>
	29, 955, 537
	<hr/>

The resolution of the Senate is returned herewith.

I have the honor to be, sir, &c.,

GEO. BOMFORD, *Colonel of Ordnance.*

Hon. LEWIS CASS, *Secretary of War.*

Statement of the cost of four classes of arsenals, exclusive of exterior walls, fences, gates, roads, tools, machinery, wharves, &c.

FIRST CLASS—DEPOT, SIMPLY.

Names.	No. of buildings.	Size.	Cost of each.	Total.
Arsenals.....	2	120 by 40 feet, and 47 feet high.....	\$20,000	\$40,000
Great magazine.....	1	To contain from 2,500 to 3,000 bbls. powder.....	12,000	12,000
Officers' quarters.....	1	43 by 40 feet, and 40 feet high.....	8,000	8,000
Barracks.....	1	100 by 36 feet, and 35 feet high.....	13,000	13,000
Gun-carriage shed.....	1	105 by 30 feet, and 10 feet high.....	3,050	3,050
Office.....	1	40 by 20 feet, and 29 feet high.....	2,430	2,430
Small magazine for fixed ammunition.....	1	30 by 20 feet, and 14 feet high.....	756	756
Connecting walls.....	.....	.....	.....	1,000
Land—25 acres at least.—(See note 1).....	.....	Estimated at \$40 per acre.....	.....	1,000
Gratuating and levelling the site proper, making drains, culverts, &c.....	.....	.....	.....	1,000
				82,236

Statement of the cost of four classes of arsenals, &c.—Continued.

SECOND CLASS—DEPOT AND PLACE OF REPAIR.

Names	No. of buildings.	Size.	Cost of each.	Total.
Arsenal	2	120 by 40 feet, and 47 feet high.....	\$20,000	\$40,000
Great magazine	1	To contain from 2,500 to 3,000 bbls. powder...	12,000	12,000
Officers' quarters	1	43 by 40 feet, and 40 feet high.....	8,000	8,000
Barracks	1	100 by 36 feet, and 35 feet high.....	13,000	13,000
Gun-carriage shed	1	105 by 30 feet, and 10 feet high.....	3,050	3,050
Smiths' shop	1	25 by 30 feet, and 14 feet high.....	945	945
Office	1	40 by 20 feet, and 29 feet high.....	2,430	2,430
Carriage-makers' shop	1	25 by 30 feet, and 14 feet high.....	945	945
Armors' and turners' shop	1	50 by 30 feet, and 14 feet high.....	1,890	1,890
Painters' shop	1	20 by 14 feet, and 14 feet high.....	352	352
Laboratory, viz:				
Driving and filing shop	1	25 by 25 feet, and 14 feet high.....	787	787
Finishing room	1	25 by 25 feet, and 14 feet high.....	787	787
Small magazine for fixed ammunition	1	30 by 20 feet, and 14 feet high.....	756	756
Connecting wall				
Land—25 acres at least—(See note)		Estimated at \$40 per acre		1,200
Gratuating and levelling the site proper, making drains, culverts, &c				1,000
				88,342

THIRD CLASS—DEPOT AND PLACE OF CONSTRUCTION AND REPAIR, WITHOUT WATER OR STREAM POWER.

MILITARY AND NAVAL DEFENCES.

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Names.	No. of buildings.	Size.	Cost of each.	Total.
Arsenal	2	120 by 40 feet, and 47 feet high.....	\$20,000	\$40,000
Great magazine.....	1	To contain from 2,500 to 3,000 bbls. powder..	12,000	12,000
Officers' quarters.....	3	43 by 40 feet, and 40 feet high.....	8,000	24,000
Barracks	1	100 by 36 feet, and 35 feet high.....	13,000	13,000
Gun-carriage sheds.....	2	100 by 30 feet, and 10 feet high.....	3,050	6,100
Smiths' shop.....	1	80 by 35 feet, and 14 feet high.....	3,528	3,528
Timber sheds	2	105 by 30 feet, and 10 feet high.....	2,250	4,500
Office.....	1	40 by 20 feet, and 29 feet high.....	2,430	2,430
Carpenters' and carriage-makers' shop.....	1	80 by 35 feet, and 14 feet high.....	3,558	3,558
Armors' and turners' shop.....	1	50 by 30 feet, and 14 feet high.....	1,890	1,890
Tinners' and casting shop.....	1	40 by 25 feet, and 14 feet high.....	1,260	1,260
Painters' shop.....	1	30 by 25 feet, and 14 feet high.....	945	945
Saddlers' shop.....	1	30 by 25 feet, and 14 feet high.....	945	945
Laboratory, viz:				
Driving and filling shop.....	1	25 by 25 feet, and 14 feet high.....	787	787
Finishing room	1	25 by 25 feet, and 14 feet high.....	787	787
Small magazine for fixed ammunition.....	1	30 by 20 feet, and 14 feet high.....	756	756
Guard room.....	1	30 by 25 feet, and 14 feet high.....	945	945
Connecting wall				1,350
Land—25 acres at least.—(See note)		Estimated at \$40 per acre		1,000
Graduating and levelling the site proper, making drains, culverts, &c.....				1,350
Coal-houses				1,000
				122,101

Statement of the cost of four classes of arsenals, &c.—Continued.

FOURTH CLASS—DEPOT AND PLACE OF CONSTRUCTION AND REPAIR, WITH WATER OR STEAM POWER.

Names.	No. of buildings.	Size.	Cost of each.	Total.
Arsenal	2	120 by 40 feet, and 47 feet high.	\$20,000	\$40,000
Great magazine	1	To contain from 2,500 to 3,000 bbls. powder.	12,000	12,000
Officers' quarters	3	43 by 40 feet, and 40 feet high.	8,000	24,000
Barracks	1	100 by 36 feet, and 35 feet high.	13,000	13,000
Gun-carriage sheds	3	100 by 30 feet, and 10 feet high.	3,050	9,150
Smiths' shop	1	80 by 35 feet, and 14 feet high.	3,528	3,528
Timber sheds	3	105 by 30 feet, and 10 feet high.	2,250	6,750
Office	1	40 by 20 feet, and 29 feet high.	2,430	2,430
Carpenters' and carriage-makers' shop.	1	80 by 35 feet, and 14 feet high.	3,528	3,528
Steam engine, or horse for water power	1	100 by 40 feet, and 18 feet high.	6,480	6,480
Armors' shop	1	50 by 30 feet, and 14 feet high.	1,890	1,890
Tinners' and casting shop	1	40 by 25 feet, and 14 feet high.	1,260	1,260
Painters' shop	1	30 by 25 feet, and 14 feet high.	945	945
Saddlers' shop	1	30 by 25 feet, and 14 feet high.	945	945
Laboratory, viz:				
Driving and filling shop	1	25 by 25 feet, and 14 feet high.	787	787
Finishing room	1	25 by 25 feet, and 14 feet high.	787	787
Small magazine for fixed ammunition	1	30 by 20 feet, and 14 feet high.	756	756
Guard room	1	30 by 25 feet, and 14 feet high.	945	945
Connecting walls				
Land—25 acres at least.—(See note.)		Estimated at \$40 per acre.		1,450
Graduating and levelling the site proper, making drains, culverts, &c.				1,000
Coal-houses				1,450
				1,500
				134,681

- NOTE 1. Twenty-five acres of land, at least, are necessary at each class of the arsenals, in order to be enabled to prove powder; which operation requires a space of 500 to 400 yards.
2. It is perceived that the expense of the first class may be reduced \$20,000, if only one arsenal building be required in that class. The same remark applies to the other classes.
3. There are times when several companies of troops may be required, temporarily at least, at each class of the arsenals. The barracks are, therefore, made of the same size at each of the classes, and large enough to accommodate the companies as well as the troops of the ordnance *proper*. There has always been a deficiency at the arsenals in barracks, when they have been occupied by troops.
4. The above includes everything connected with the buildings and site *proper*, nothing more. The expenses of the apparatus and tools, utensils, engines, &c., which may be necessary to put the several classes into operation, are not included.
5. The extent of the site occupied by each of the classes may be the same; and thus any one class may be enlarged into its next adjacent class, without other expense than is required by the additional buildings.
6. The estimated expenditures in these statements are founded on the prices paid in the vicinity of Philadelphia, and are sufficiently near the truth, it is believed, for all positions which are not in Florida, Louisiana, or Alabama.

ORDNANCE OFFICE, Washington, March 8, 1836.



REPORT FROM THE NAVY DEPARTMENT.

NAVY DEPARTMENT, *March 31, 1836.*

SIR: In answer to so much of the resolutions of the Senate of the United States, of the 18th ultimo, as required information as to the probable amount of appropriations that may be necessary to supply the United States with ordnance, arms, and munitions of war, which a proper regard to self-defence would require to be always on hand, and the probable amount that would be necessary to place the naval defences of the United States (including the increase of the navy, navy yards, dock yards, and steam or floating batteries) upon the footing of strength and respectability which is due to the security and welfare of the Union, I have the honor to lay before you a report of the board of navy commissioners, of the 2d instant, which contains the best information upon the subjects referred to in possession of this department, which is respectfully submitted.

MAHLON DICKERSON.

The PRESIDENT of the United States.

IN THE SENATE OF THE UNITED STATES.

January 21, 1836,

The following resolutions were ordered to be postponed to Monday next:

Resolved, That so much of the revenue of the United States, and the dividends of stock receivable from the Bank of the United States, as may be necessary for the purpose, ought to be set apart and applied to the general defence and permanent security of the country.

Resolved, That the President be requested to cause the Senate to be informed:

1. The probable amount that would be necessary for fortifying the lake, maritime, and Gulf frontier of the United States, and such points of the land frontier as may require permanent fortifications.

2. The probable amount that would be necessary to construct an adequate number of armories and arsenals in the United States, and to supply the States with field artillery (especially brass field pieces) for their militia, and with side-arms and pistols for their cavalry.

3. The probable amount that would be necessary to supply the United States with the ordnance, arms, and munitions of war, which a proper regard to self-defence would require to be always on hand.

4. The probable amount that would be necessary to place the naval defences of the United States (including the increase of the navy, navy yards, dock yards, and steam or floating batteries) upon the footing of strength and respectability which is due to the security and to the welfare of the Union.

Passed February 18, 1836.

NAVY COMMISSIONER'S OFFICE, *March 2, 1836.*

SIR: The board of navy commissioners have the honor to acknowledge the receipt of your letter of the 26th ultimo, requesting a "report on the probable amount that would be necessary to supply the United States with the ordnance, arms, and munitions of war (so far as may be wanted for the purposes of the navy) which a proper regard to self-defence would require to be always on hand; and on the probable amount that would be necessary to place the naval defences

of the United States (including the increase of the navy, navy yards, dock yards, and steam or floating batteries) upon the footing of strength and respectability which is due to the security and welfare of the Union."

In conformity to these instructions the board respectfully state, with respect to the ordnance for the navy, that after a careful examination of the subject, taking into consideration the ordnance and ordnance stores now on hand, and the extent of force for which it may be expedient to make early provision, they are of opinion that the sum of one million eight hundred thousand two hundred and fifty dollars will be required to supply the ordnance, arms, and munitions of war which may be wanted for the use of the navy, and which a proper regard to self-defence would require to have prepared ready for use.—(See paper A annexed for the detail.)

The board beg leave respectfully to observe, that for the vessels which are now built, or have been specially authorized, armaments may be provided, with some partial exceptions, from the cannon and carronades already provided, and the deficient ordnance, arms, and other ordnance stores will be principally required for the vessels which are yet to be authorized or built. It is therefore respectfully recommended that any appropriation for this purpose, instead of being special or separate, should be included in an appropriation for "building and repairing vessels, and for the purchase of materials and stores for the navy."

The second object of inquiry, as to "the probable amount that would be necessary to place the naval defences of the United States (including the increase of the navy, navy yards, dock yards, and steam or floating batteries) upon the footing of strength and respectability which is due to the security and welfare of the Union," embraces a wide range, requires an examination of several subjects of great importance, and the expression of opinions upon which differences of opinion may and probably will exist. Before any estimate can be formed of the probable *amount* that would be necessary for the purposes proposed an examination must be had, and an opinion formed of the *nature* and *extent* of the naval force which is "necessary to place the naval defences of the United States upon the footing of strength and respectability which is due to the security and welfare of the Union," and the time within which it ought to be, or might be, advantageously prepared.

Taking into view the geographical position of the United States, with reference to other nations with whom we are most likely to be brought into future collision; the great extent of our maritime frontier, and the extreme importance of securing the communications of the whole valley of the Mississippi, though the Gulf of Mexico, and the intercourse between all parts of the coast; the efficient protection of our widely extended and extremely valuable commerce, under all circumstances; and the great naval and fiscal resources of the country, the board consider the proper limit for the *extent* of the naval force to be that which can be properly manned when the country may be involved in a maritime war.

In estimating this extent it is assumed that about ninety thousand seamen are employed in the foreign and coasting trade and fisheries. As the navigation has been generally increasing, there is little reason to apprehend any immediate diminution during peace. In any war which would require the employment of all our naval force, it is believed that such interruptions would occur to our commerce as would enable the navy to obtain without difficulty at least thirty thousand seamen and ordinary seamen; and if it should continue long, it is probable that a larger number might be engaged. The number of thirty thousand, with the landsmen who may be safely combined with them, will therefore be assumed as the number for which vessels ought to be prepared for the commencement of a state of hostilities.

With respect to the *nature* of the force which it would be most advantageous to prepare, there will undoubtedly be differences of opinion. The materials for the larger vessels, as ships of the line and frigates, would be obtained with great

difficulty, under circumstances which would interfere with our coasting trade, whilst sloops of war and smaller vessels could be built with greater comparative facility under such circumstances.

The preparation of a considerable number of steam vessels, ready to defend our great estuaries, to aid in the operations of our other naval force, and in the concentration or movements of the military force, as circumstances might require, is believed to demand serious and early attention.

Having due regard to these and other considerations, the board propose that the force to be prepared, ready for use when circumstances may require it, shall consist of 15 ships of the line, 25 frigates, 25 sloops of war, 25 steamers, and 25 smaller vessels, and that the frames and other timber, the copper, ordnance, tanks, and chain cables shall also be prepared for 10 ships of the line and 10 frigates.

The force proposed to be prepared, ready for use, will employ and can be manned by the 30,000 seamen and others which have been considered available in a state of war. The materials for the ten ships of the line and ten frigates will constitute a necessary reserve for increasing the number of those vessels, should they be required, or for supplying losses from decay or casualties.

To estimate the amount necessary to prepare this force it is proposed to ascertain the whole probable cost, including ordnance, by the average cost of similar vessels already built, (steam vessels excepted,) and of materials already procured, and then to deduct the value of the present force, and all other present available means.

Total cost of 15 ships of the line.....	\$8, 250, 000
25 frigates	8, 750, 000
25 sloops	3, 125, 000
25 steamers	5, 625, 000
25 smaller vessels	1, 250, 000
Total for vessels.....	27, 000, 000
For the proposed materials, as a reserve	3, 315, 000
Total amount required.....	30, 315, 000
Deduct from this sum the value of the present force and available means, as follows:	
In vessels afloat, valued at $\frac{60}{100}$ of original value, about.....	\$4, 440, 000
In vessels building, at actual cost	\$2, 455, 000
In materials collected for building do.....	2, 945, 000
In treasury for these purposes, October 1, 1835 ...	1, 215, 000
For three years' appropriation, "gradual improvement," when due	1, 500, 000
Total of present value and available means.....	12, 555, 000
Leaves still to be provided for vessels.....	17, 760, 000

In presenting any estimate for the amounts which may be necessary to place the different navy yards in a proper situation, the board can do no more than give very general opinions, as the objects of expenditure are foreign to their own professional pursuits, and they have no civil engineer to whom they can refer for the necessary detailed information.

From a knowledge of the cost of works hitherto completed or in progress, and of the wants at the respective yards for the proper preservation of materials, and for extending the means for building, preserving, repairing, and equipping

vessels, they are satisfied, however, that the public interests would be greatly promoted, and, in fact, absolutely require an average annual expenditure of \$500,000 for years to come upon the different yards.

In New York the necessity for a dry dock is severely felt already, and its importance will increase with any increase of the navy. This, with its dependencies, will require nearly a million of dollars. At Pensacola, which nature has designated as one of the naval keys of the Gulf of Mexico, and of the immense commerce of the valley of the Mississippi, large expenditures will be necessary to secure adequate means for repairing and subsisting a naval force upon that station, and thus prevent the many evils which would be severely felt in a state of war, if the vessels were obliged to resort to the Atlantic ports for ordinary repairs or supplies of any kind. In other yards there are objects of great and urgent importance.

Generally the proposed arrangements for the preservation of all materials and vessels should precede their collection or construction. Whilst, therefore, the board propose \$500,000 as the *average* annual appropriation, until the yards should be placed in proper order, they would also state that appropriations of \$700,000, annually, for the next four or five years, and a less sum than \$500,000 afterwards, would, in their opinion, be most judicious.

The next subject for consideration is the nature and extent of force proper to be kept employed in a time of peace for the protection of our commercial interests, and to prepare the officers and others for the efficient management of the force proposed for a state of war.

Our commerce is spread over every ocean; our tonnage is second only to that of Great Britain, and the value of articles embarked is believed by many to be fully equal to those transported by the ships of that nation. In the safety and prosperity of this commerce all the other interests of the United States are deeply interested. It is liable to be disturbed and injured in various modes, unless the power of the country, exerted through its naval force, is ready to protect it. It is therefore proposed that small squadrons should be employed upon different stations, subject at all times, however, to such modifications as circumstances may require.

Of these squadrons, one might be employed in the *Mediterranean*, and attend to our interests on the west coasts of Spain and Portugal, and southward to the western coast of Morocco and Madeira.

One in the *Indian ocean* to visit, successively, the most important commercial points east of the Cape of Good Hope, to China, then to cross the Pacific, visit the northern whaling stations and islands, cruise some time upon the west coast of America, and return by way of Cape Horn, the coast of Brazil, and the Windward West India islands.

One in the *Pacific ocean* to attend to our interests upon the west coast of America; keeping one or more vessels at or near the Sandwich and other islands which are frequented by our whale ships and other vessels, and, in succession, cross the Pacific, visiting the islands and southern whaling stations, China, and other commercial places, and return, by the way of the Cape of Good Hope, to the United States.

A squadron upon the *coast of Brazil*, or east coast of South America, might be charged with attention to our interests on the whole of that coast, and upon the north coast so far as to include the Orinoco. If a ship of the line should be employed on this station, it might be occasionally sent round to the Pacific.

A squadron in the *West Indies and Gulf of Mexico* will be necessary for, and may be charged with, attention to the protection of our commerce amongst the West India islands and along the coast of South America, from the Orinoco round to the Gulf of Mexico.

A small *coast squadron* upon our Atlantic coast might be very advantageously employed in making our officers familiarly and thoroughly acquainted with all

our ports and harbors, which would be very useful in a state of war. The vessels would also be ready for any unexpected service, either to transmit information or orders; to reinforce other squadrons, or to visit our eastern fisheries. Besides this cruising force, it is recommended that a ship of the line be kept in a state of readiness for service, *men excepted*, at Boston, New York, and Norfolk and used as receiving ships for the recruits as they are collected; this would give the means of furnishing a considerable increase of force with a very small addition to the current expense.

For the nature and distribution of this force, the following is proposed :

	Line.	Frigates.	Sloops	Steamers.	Smaller.	Total.
Mediterranean	1	2	2	.....	2	7
Indian ocean .....	.....	1	2	.....	1	4
Pacific .....	.....	2	3	.....	2	7
Brazil	1	1	2	.....	2	6
West Indies .....	.....	1	4	1	2	8
Home	*3	1	2	3	1	10
Total	5	8	15	4	10	42

* As receiving ships.

Considering this force with reference to its power of giving experience to the officers, and qualifying them for the management of the force proposed for war, it appears that for the force proposed to be *actually employed at sea*, in peace and in war, the peace force will require and employ about two-thirds the number of commanders of squadrons; about one-third of the captains and forty one-hundredths of the commanders and lieutenants and masters, which the proposed war force would demand, and midshipmen sufficient to supply the additional number of these last classes which a change to a state of war would require.

Supposing the foregoing force to be that which is to be kept in commission, the next question is, what force will be necessary to keep *afloat*, to provide the necessary reliefs? The board believe that this force should be the *least* which will answer the object proposed, as every vessel when launched is exposed to a decay which is much more rapid than when left under the cover of a tight ship-house.

We have already six ships of the line afloat, which will be fully equal to our present wants, when they are repaired. A reserve of three frigates may be required, but only to be launched when the necessity for it shall arise; for the sloops-of-war and smaller vessels, it will probably be sufficient to merely keep up the cruising force as proposed, except some extraordinary demand should arise. The force of steam vessels proposed, when distributed at Boston, New York, Norfolk, and Pensacola, would probably meet all the demands of a state of peace, and furnish useful schools for officers, to prepare them for the proper management of others, when they are required. The force to be kept afloat, then, will be assumed at six ships of the line, eleven frigates, fifteen sloops-of-war, four steamers, and ten smaller vessels. The annual amount necessary to keep this force in a state of repair, and to supply the wear and tear of stores of cruising vessels, is estimated at \$950,000.

The estimated expense of the force which is proposed to be kept in commission, exclusive of the repairs as above stated, and for the pay of officers at navy yards, rendezvous, receiving vessels, of superintendents, and civil officers at all the shore establishments, and at the present cost of those establishments, is:

For pay of officers and seamen in commission, superintendents and civil officers, and all others, at all the establishments, about . . .	\$2, 500, 000
For provisions	750, 000
For medicines and hospital stores	60, 000
For ordnance stores, powder, &c.	120, 000
For contingencies of all kinds	390, 000
Total for the navy branch	3, 850, 000

If the marines are continued as a part of the naval establishment, instead of substituting ordinary seamen and landsmen for them in vessels, and watchmen in navy yards, and transferring the marines to the army as artillery, as has sometimes been suggested, the sum of about \$400,000 annually will be required for that corps.

To determine the *annual amount* which it may be necessary to appropriate to prepare the vessels and reserve frames and other materials which have been proposed, some *time* must be assumed within which they shall be prepared. Believing that reference to the ability of the treasury to meet the probable demands upon it, for all the purposes of the government, must necessarily be considered in determining what amount may be allotted to the navy, the board have examined the reports of the Secretary of the Treasury, and respectfully propose to establish the ordinary annual appropriation for the navy, including the ordnance, at seven millions of dollars.

The operation of such annual appropriations may be seen by the following recapitulation of the proposed heads of expenditure :

For the force in commission and its dependencies, as before stated	\$3, 850, 000
The <i>average</i> appropriation for navy yards	500, 000
For the repairs and wear and tear of vessels	950, 000
For building vessels and purchase of materials	1, 300, 000
Total for the navy proper	6, 600, 000
For the marine corps	400, 000
	7, 000, 000

By the adoption of this gross sum for the navy and its dependencies, and the other items as proposed, \$1,300,000 would be annually applied to increasing the number of our vessels and the purchase of materials ; and, with this annual expenditure, the deficiency of \$17,760,000 would not be supplied sooner than between thirteen and fourteen years, or at about the year 1850. The board consider this as the most *remote* period at which the proposed force ought to be ready, and are of opinion that it might be prepared much sooner, should Congress deem it necessary or advisable to make larger appropriations than have been suggested.

The board have expressed the opinion that no more vessels should be launched than are absolutely necessary to meet the demands for the force to be kept in commission ; but, as a necessary consequence, they recommend that the other additional force should be in such a state of readiness that it may be launched and equipped by the time that men could be obtained for it. This arrangement renders an early attention to the completion of all the building-slips, ship-houses, and launching ways at the different yards, so that the ships may be built, and that our docks, wharves, workshops, and storehouses should be finished ; that our ships may be equipped with the greatest economy and despatch whenever they may be required.

Before concluding this report, the board would respectfully offer some remarks upon the form of the appropriations, and suggest some attention to existing acts of Congress.

By the separate acts for the gradual increase of the navy; for the gradual improvement of the navy; for building and rebuilding different vessels, altogether seven in number; each appropriation is rendered separate and distinct, although the general object is the same, and requires the use of the same kinds of materials. It is necessary, in conformity to the law of the 3d of March, 1809, that the vouchers, receipts, expenditures, and accounts of each should be kept separately; and, in strictness, no article purchased for one can be applied to the use of another, however desirable or economical such use may be.

It is suggested, therefore, for consideration, whether it might not be very advantageous for Congress to determine, by some general act or resolution, the number and classes of vessels which the President might be authorized to have built, or for which materials might be procured, and then appropriate specially the amounts which might be devoted to those objects, and for keeping the force afloat in repair, under the general head of "For building and repairing vessels, and for purchase of materials and stores."

The adoption of some such plan, and removing the special restrictions which now exist, and requiring, as at present, detailed estimates for the current repairs and reports of proceedings in building vessels and for purchase of materials, would, it is believed, greatly simplify and diminish the number of accounts at the Treasury Department and in all the navy yards, without infringing in any degree the principle of special appropriations; would furnish to Congress all the information they now receive, and would enable us at all times to use those materials which are best prepared and most appropriate for the different objects for which they might be wanted.

The board beg leave, also, respectfully to state their opinion of the necessity for the services of a competent civil engineer for the navy to furnish plans and estimates for all hydraulic and civil objects, and to have a general superintendence of their construction under the direction of the department. The particular character of these works requires the supervision of such a person, not less from motives of economy in the ordinary expenditures than from the more important consideration of their proper arrangement, solidity of construction, and durability.

All which is respectfully submitted.

JNO. RODGERS.

Hon. M. DICKERSON, *Secretary of the Navy.*

A.

Upon the supposition that the naval force to be so prepared that it might be equipped for sea at short notice shall consist of 15 ships of the line, 25 frigates, 25 sloops-of-war, 25 steamers, and 25 smaller vessels; and that the frames and other durable materials shall be provided for 10 ships of the line and 10 frigates as a reserve. The following statement shows the total number and character of the armaments which the whole force will require, the number which can be furnished from the ordnance on hand, and the number which will be still required:

	For ships of line.	Frigates.	Sloops.	Steamers.	S. V.
Total number required.....	25	35	25	25	25
On hand for.....	11	22	16	00	12
Deficient	14	13	9	25	13

Besides the bomb-cannon, guns, and carronades for these armaments, there would be required shot, shells, small arms, pistols, and cutlasses, and a supply of powder sufficient for equipping a strong force in case of a sudden emergency.

The cost of these objects may be estimated as follows :

Armaments for 14 ships of the line, at \$45,000 each.....	\$630, 000
Armaments for 13 frigates, at \$16,500 each.....	214, 500
Armaments for 9 sloops, at \$6,000 each.....	54, 000
Armaments for 25 steamers, at \$3,000 each.....	75, 000
Armaments for 13 smaller vessels, at \$1,500 each.....	19, 500
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	993, 000
For guns, bomb-cannon, and carronades, 100 shot to each gun, and 200 shells to each bomb-cannon, and shells for guns.....	427, 000
8,000 muskets.....	100, 000
3,500 pairs of pistols.....	43, 750
8,000 cutlasses.....	34, 000
9,000 barrels of powder.....	202, 500
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	1, 800, 250
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HO. REPS., EX. DOC. No. 206, 20th CONGRESS, 1st SESSION.

L E T T E R
FROM
THE SECRETARY OF WAR,
TRANSMITTING,

In compliance with the resolution of the 9th ultimo, a system of national defence and the establishment of national founderies.

MAY 15, 1840.—So much as relates to national founderies referred to a select committee on the subject, and the residue to the Committee on Military Affairs.

WAR DEPARTMENT, May 12, 1840.

SIR: In reply to so much of the resolution of the House of Representatives of the 9th ultimo, requesting the Department of War "to lay before this House, as soon as practicable, a report of a full and connected system of national defence, embracing steam and other vessels of war, and 'floating batteries' for coast and harbor defence, and national founderies, and the internal means, auxiliary to these, for transportation and other warlike uses, by land, and that he be requested to furnish this House with the reports submitted to his department at any time by Major General Edmund P. Gaines, or other person or persons of professional experience, of their 'plans of defence,' if any such have been submitted, with the views of the Secretary of War thereon; and that the Secretary furnish an estimate of the expenses of his own and other plans he may report, distinguishing such parts of plans as ought to be immediately adopted and prosecuted, with the probable cost and time of their prosecution and completion:" I have the honor to transmit the accompanying reports of a board of officers, assembled to examine the subject, and to present a connected plan of defence for the maritime and inland frontiers of the United States.

On submitting these reports, I should have considered my duty discharged, had not the resolution required me to give an opinion with regard to the several plans of national defence presented to the department, and to furnish a comparative statement of the cost of each. The plan presented to Congress by Major General Gaines, which will be found in the accompanying printed document, and that now submitted from the board of officers, are the only ones that have been brought to the notice of the department. On the subject of the former, I beg leave to state that, with every respect for the experience of the gallant author, I am constrained to differ from him when he proposes to abandon the system of permanent defences as obsolete, and to rely entirely upon the expedients of vast floating batteries and extensive lines of railroads. The accompanying reports of the board of navy commissioners and the chief topographical engineer exhibit the probable cost of carrying out the general's plans, which far exceeds that of constructing permanent works of defence, without being in any manner so well calculated to protect the country.

After a careful and anxious investigation of a subject involving in so high a degree the safety and honor of the country, I fully concur in the opinions expressed by the board of the superiority of permanent works of defence over all other expedients that have yet been devised, and of their absolute necessity if we would avoid the danger of defeat and disgrace—a necessity rather increased than diminished by the introduction of steam batteries and the use of hollow shot. It would, in my opinion, prove a most fatal error to dispense with them, and to rely upon our navy alone, aided by the number, strength, and valor of the people to protect the country against the attacks of an enemy possessing great naval means. To defend a line of coast of three thousand miles in extent, and effectually to guard all the avenues to our great commercial cities and important naval depots, the navy of the United States must be very superior to the means of attack of the most powerful naval power in the world, which will occasion an annual expense this country is not now able to bear; and this large naval armament, instead of performing its proper function as the sword of the state in time of war, and sweeping the enemy's commerce from the seas, must be chained to the coast or kept within the harbors.

It has been clearly demonstrated that the expense of employing a sufficient body of troops, either regulars or militia, for a period of even six months, for the purpose of defending the coast against attacks and feints that might be made by an enemy's fleet, would exceed the cost of erecting all the permanent works deemed necessary for the defence of the coast. One hundred thousand men divided into four columns, would not be more than sufficient to guard the vulnerable points of our maritime frontier, if not covered by fortifications. An amount of force against an expedition of 20,000 men, which, if composed of regulars would cost the nation \$30,000,000 per annum, and if militia, about \$40,000,000; and, supposing only one-half the force to be required to defend the coast with the aid of forts properly situated and judiciously constructed, the difference of expense for six months would enable the government to erect all the most necessary works. This calculation is independent of the loss to the nation by abstracting so large an amount of labor from the productive industry of the country, and the fearful waste of life likely to result from such a costly, hazardous, and harassing system of defence.

It must be recollected, too, that we are not called upon to try a new system, but to persevere in the execution of one that has been adopted after mature deliberation, and that is still practiced in Europe on a much more extensive scale than is deemed necessary here; so much more so, that there exist there single fortresses, each of which comprises more extensive and stronger works than is here proposed for the whole line of our maritime frontier. We must bear in mind, also, that the destruction of some of the important points on that frontier would alone cost more to the nation than the expense of fortifying the whole line would amount to, while the temporary occupation of others would drive us into expenses far surpassing those of the projected works of defence.

The organization of permanent defences proposed by the board for our frontiers is not upon military and naval considerations alone, but is calculated to protect the internal navigation of the country. The fortifications proposed, at the same time that they protect our coast from the danger of invasion, and defend the principal commercial avenues and naval establishments, cover the whole line of internal navigation, which, in time of war, will contribute in so essential a manner to the defence of the country by furnishing prompt and economical means of transportation; so that, while the main arteries which conduct our produce to the ocean are defended at their outlets, the interior navigation, parallel to the coast, is protected, and a free communication kept up between every part of the Union.

Although this department is fully aware of the importance of affording permanent and as perfect protection as may be possible to the whole coast, it

regards that section embraced by the shores of the Gulf of Mexico as the most exposed and the most important. It is true that the coast to the eastward of Cape Hatteras possesses points that may attract the attention of an enemy, and that, in the present state of things, the chances of success would justify a hostile enterprise, and are much greater than a wise provision would allow to exist. It is equally so, that, however difficult of access the coast may be from Cape Hatteras to Florida, the nature of a part of its population, and the facility afforded to an enemy by its present neglected condition to blockade and annoy the principal outlets of the valuable exports of that important portion of our country, require our early attention; still, the means of defence from Maine to Florida may be united together, and the parts may afford mutual succor to each other. But the coast of the Gulf of Mexico, on the contrary, is insulated and apart, and must depend altogether upon its own resources. It constitutes the maritime frontier not only of Louisiana, Mississippi, Alabama, and of West Florida, but of Arkansas, Tennessee, Kentucky, Ohio, Missouri, Indiana, and Illinois, and the Territories of Wisconsin and Iowa, embracing nearly three-fourths of the territory of the United States; and it must be borne in mind that the evils which would result from the temporary occupation of the delta of the Mississippi, or from a successful blockade of the coast of the Gulf of Mexico, would not only injure the prosperity of these States, but would deeply affect the interests of the whole Union; and no reasonable expense, therefore, ought to be spared to guard against such a casualty.

Although it would appear, on a superficial view, to be a gigantic and almost impracticable project to fortify such an immense extent of coast as that of the United States, and difficult, if not impossible, to provide a sufficient force to garrison and defend the works necessary for that purpose, yet the statements contained in the reports of the board remove these objections entirely. The coast of the United States throughout its vast extent has but few points which require to be defended against a regular and powerful attack. A considerable portion of it is inaccessible to large vessels, and only exposed to the depredations of parties in boats and small vessels-of-war; against which inferior works and the combination of the same means and a well-organized local militia will afford sufficient protection. The only portions which require to be defended by permanent works of some strength are the avenues to the great commercial cities and naval and military establishments, the destruction of which would prove a serious loss to the country, and be regarded by an enemy as an equivalent for the expense of a great armament. It is shown, also, that the number of men required, on the largest scale, for the defence of these forts, when compared with the movable force that would be necessary without them, is inconsiderable. The local militia, aided by a few regulars, and directed by engineer and artillery officers, may, with previous training, be safely intrusted with their defence in time of war.

It cannot be too earnestly urged that a much smaller number of troops will be required to defend a fortified frontier than to cover one that is entirely unprotected, and that such a system will enable us, according to the spirit of our institutions, to employ the militia effectually for the defence of the country. It is no reproach to this description of force, and no imputation on their courage, to state what the experience of two wars has demonstrated—that they cannot stand the steady charge of regular forces, and are disordered by their manœuvres in the open field; whereas, their fire is more deadly from behind ramparts.

The principles of defence recommended by the board for the maritime frontier of the United States are applicable to the northern or lake frontier and to that of the west. Some few sites are recommended to be occupied by fortifica-

tions, both to afford protection to places fast growing up into important cities, and to furnish a refuge and rallying point for our naval and land forces.

Very respectfully, your most obedient servant,

J. R. POINSETT.

Hon. R. M. T. HUNTER,
Speaker of the House of Representatives.

WASHINGTON, May 10, 1840.

SIR: The board of officers to whom the subject of the military defences of the country was committed have the honor to submit the following report, viz:

1st. Report on the defence of the Atlantic frontier, from Passamaquoddy to the Sabine. This is divided into two distinct portions, viz: the coast from Passamaquoddy to Cape Florida, and the coast from Cape Florida to the Sabine bay.

2d. Report on the defence of the northern frontier, from Lake Superior to Passamaquoddy bay.

3d. Report on the western frontier, from the Sabine bay to Lake Superior.

Connected with these reports are tabular statements, showing the "permanent defence commenced, completed, projected, or deemed necessary;" with conjectural estimates of "the probable expense of constructing or completing such works as may not yet have been completed or commenced."

4th. Reports "on the armories, arsenals, magazines, and founderies, either constructed or deemed necessary; with a conjectural estimate of the expense of constructing such of said establishments as may not yet be completed or commenced, but which may be deemed necessary."

Hon. J. R. POINSETT,
Secretary of War.

REPORT ON THE DEFENCE OF THE ATLANTIC FRONTIER, FROM PASSAMAQUODDY TO THE SABINE.

So entirely does this board concur in the views presented on several occasions, within the last twenty years, by joint commissions of naval and military officers, by the board of engineers for fortifications, and by individual officers who have at various times been called on to treat the same subject, that in quoting their opinions we should, for the greater part, express our own. But though these reports are, some of them, comprehensive and elaborate, we suppose that an explicit statement of our views, at least as to the great principles on which the system of defence should be erected, is expected from us, especially as the system now in progress has been the subject of a criticism which, considering the high official source whence it emanated, may be supposed to have disturbed the confidence of the public therein.

The nature and source of that criticism, attacking as it does fundamental principles, and inculcating doctrines which we believe to be highly dangerous, will lead us at times into amplifications that we fear may prove tedious. This, however, we must risk, trusting to the importance of the subject for excuse, if not for justification.

The principal errors, as we conceive, in the document * referred to are—

1. That for the defence of the coast the chief reliance should be on the navy.
2. That, in preference to fortifications, floating batteries should be introduced wherever they can be used.

* See Senate document No. 293, vol. 4, p. 1, 24th Congress, 1st session.

3. That we are not in danger from large expeditions; and, consequently,

4. That the system of the board of engineers comprises works which are unnecessarily large for the purposes they have to fulfil.

On these topics, together with other errors of the same nature, we shall feel constrained to enlarge.

The first question that presents itself is this: *What, in general terms, shall be the means of defence?*

We have a seacoast line of more than three thousand miles in extent, along which lie scattered all the great cities, all the depots of commerce, all the establishments of naval construction, outfit, and repair, and towns, villages, and establishments of private enterprise without number. From this line of seacoast navigable bays, estuaries, and rivers, the shores of which are similarly occupied, penetrate deep into the heart of the country.

How are the important points along this extended line to be secured from hostile expeditions, especially since one of the prominent causes of the prosperity of these various establishments, namely, facility of access from the ocean, is, as regards danger from an enemy, the chief cause of weakness?

Shall the defence be by a navy exclusively?

The opinion that the navy is the true defence of the country is so acceptable and popular, and is sustained by such high authority, that it demands a careful examination.

Before going into this examination we will premise that by the term "navy" is here meant, we suppose, line-of-battle ships, frigates, smaller sailing vessels, and armed steamships, omitting vessels constructed for local uses merely, such as floating batteries.

For the purpose of first considering this proposition in its simplest terms, we will begin by supposing the nation to possess but a single seaport, and that this is to be defended by a fleet alone.

By remaining constantly within this port our fleet would be certain of meeting the enemy, should he assail it. But if inferior to the enemy, there would be no reason to look for a successful defence; and as there could be no escape for the defeated vessels, the presence of the fleet, instead of averting the issue, would only render it the more calamitous.

Should our fleet be equal to the enemy's, the defence might be complete, and it probably would be so. Still, hazard—some of the many mishaps liable to attend contests of this nature—might decide against us; and, in that event, the consequences would be even more disastrous than on the preceding supposition. In this case the chances of victory to the two parties would be equal, but the consequences very unequal. It might be the enemy's fate to lose his whole fleet, but he could lose nothing more; while we, in a similar attempt, would lose not only the whole fleet, but also the object that the fleet was designed to protect.

If superior to the enemy, the defence of the port would in all respects be complete. But, instead of making an attack, the enemy would, in such case, employ himself in cutting up our commerce on the ocean; and nothing could be done to protect this commerce without leaving the port in a condition to be successfully assailed.

In either of the above cases the fleet might await the enemy in front of the harbor, instead of lying within. But no advantage is apparent from such an arrangement, and there would be superadded the risk of being injured by tempests, and thereby disqualified for the duty of defence, or of being driven off the coast by gales of wind; thus, for a time, removing all opposition.

In the same cases, also, especially when equal or superior to the enemy, our fleet, depending on having correct and timely notice as to the position and state of preparation of the enemy's forces, might think proper to meet him at the outlet of his own port, or intercept him on the way, instead of awaiting him

within or off our own harbor. Here it must be noticed that the enemy, like ourselves, is supposed to possess a single harbor only; but having protected it by other means, that his navy is disposable for offensive operations. If it were attempted thus to shut him within his own port, he, in any case but that of decided inferiority, would not hesitate to come out and risk a battle; because, if defeated, he could retire, under shelter of his defences, to refit, and, if successful, he could proceed with a small portion of his force—even a single vessel would suffice—to the capture of our port, now defenceless; while, with the remainder, he would follow up his advantage over our defeated vessels, not failing to pursue them into their harbor, should they return thither.

Actual superiority on our part would keep the enemy from volunteering a battle; but it would be indispensable that the superiority be steadily maintained, and that the superior fleet be constantly present. If driven off by tempests, or absent from any other cause, the blockaded fleet would escape, when it would be necessary for our fleet to fly back to the defence of its own port. Experience abundantly proves, moreover, that it is in vain to attempt to shut a hostile squadron in port for any length of time. It seems, then, that whether we defend by remaining at home, or by shutting the enemy's fleet within his own harbor, actual superiority in vessels is indispensable to the security of our port.

With this superiority the defence will be complete, provided our fleet remain within its harbor. But then all the commerce of the country upon the ocean must be left to its fate; and no attempt can be made to react offensively upon the foe, unless we can control the chances of finding the enemy's fleet within his port, and the still more uncertain chance of keeping him there; the escape of a single vessel being sufficient to cause the loss of our harbor.

Let us next see what will be the state of the question on the supposition of numerous important ports on either side, instead of a single one; relying, on our part, still, exclusively on a navy.

In order to examine this question, we will suppose our adversary to be fortified in all his harbors, and possessed of available naval means equal to our own. This is certainly a fair supposition; because what is assumed as regards his harbors is true of all maritime nations, except the United States; and as regards naval means, it is elevating our own strength considerably above its present measure, and above that it is likely to attain for years.

Being thus relatively situated, the first difference that strikes us is that the enemy, believing all his ports to be safe, without the presence of his vessels, sets at once about making our seas and shores the theatre of operations, while we are left without choice in the matter; for if he think proper to come, and we are not present, he attains his object without resistance.

The next difference is, that while the enemy (saving only the opposition of Providence) is certain to fall upon the single point, or the many points he may have selected, there will exist no previous indications of his particular choice, and, consequently, no reason for preparing our defence on one point rather than another; so that the chances of not being present and ready on his arrival are directly in proportion to the number of our ports, that is to say, the greater the number of ports the greater the chances that he will meet no opposition whatever.

Another difference is, that the enemy can choose the mode of warfare, as well as the plan of operations, leaving as little option to us in the one case as in the other. It will be necessary for us to act, in the first instance, on the supposition that an assault will be made with his entire fleet; because, should we act otherwise, his coming in that array would involve both fleet and coast in inevitable defeat and ruin. Being in this state of concentration, then, should the enemy have any apprehensions as to the result of a general engagement; should he be unwilling to put any thing at hazard; or should he, for any other reason, prefer acting by detachments, he can, on approaching the coast, disperse his force into small squadrons and single ships, and make simultaneous attacks on numerous

points. These enterprises would be speedily consummated ; because, as the single point occupied by our fleet would be avoided, all the detachments would be unopposed ; and after a few hours devoted to burning shipping, or public establishments, and taking in spoil, the several expeditions would leave the coast for some convenient rendezvous, whence they might return, either in fleet or in detachments, to visit other portions with the scourge.

Is it insisted that our fleet might, notwithstanding, be so arranged as to meet these enterprises ?

As it cannot be denied that the enemy may select his point of attack out of the whole extent of coast, where is the prescience that can indicate the spot ? And if it cannot be foretold, how is that ubiquity to be imparted that shall always place our fleet in the path of the advancing foe ? Suppose we attempt to cover the coast by cruising in front of it, shall we sweep its whole length ?—a distance scarcely less than that which the enemy must traverse in passing from his coast to ours. Must the Gulf of Mexico be swept, as well as the Atlantic ? or shall we give up the Gulf to the enemy ? Shall we cover the southern cities, or give them up also ? We must, unquestionably, do one of two things : either relinquish a great extent of coast, confining our cruisers to a small portion only, or include so much that the chances of intercepting an enemy would seem to be out of the question.

On the practicability of covering even a small extent of coast by cruising in front of it—or, in other words, the possibility of anticipating an enemy's operations ; discovering the object of movements of which we get no glimpse, and hear no tidings ; and seeing the impress of his footsteps on the surface of the ocean—it may be well to consult experience.

The Toulon fleet, in 1798, consisting of about twenty sail of line-of-battle ships and frigates, about twenty smaller vessels-of-war, and nearly two hundred transports, conveying the army of Egypt, slipped out of port and surprised Malta. It was followed by Nelson, who, thinking correctly that they were bound for Egypt, shaped his course direct for Alexandria.

The French, steering towards Candia, took the more circuitous passage, so that Nelson arrived at Alexandria before them ; and, not finding them there, returned, by the way of Caramania and Candia, to Sicily, missing his adversary in both passages. Sailing again for Alexandria, he found the French fleet at anchor in Aboukir bay ; and, attacking them, achieved the memorable victory of the Nile.

When we consider the narrowness of this sea ; the very numerous vessels in the French fleet ; the actual crossing of the two fleets on a certain night ; and that Nelson, notwithstanding, could see nothing of the enemy himself, and hear nothing of them from merchant vessels, we may judge of the probability of waylaying our adversary on the broad Atlantic.

The escape of another Toulon fleet in 1805 ; the long search for them in the Mediterranean by the same able officer ; the pursuit in the West Indies ; their evasion of him amongst the islands ; the return to Europe ; his vain efforts, subsequently, along the coast of Portugal, in the Bay of Biscay, and off the English channel ; and the meeting at last at Trafalgar—brought about only because the combined fleets, trusting to the superiority that the accession of several reinforcements had given, were willing to try the issue of battle : these are instances, of many that might be cited, to show how small is the probability of encountering, on the ocean, an enemy who desires to avoid a meeting ; and how little the most untiring zeal, the most restless activity, the most exalted professional skill and judgment, can do to lessen the adverse chances. For more than a year Nelson most closely watched his enemy, who seems to have got out of port as soon as he was fully prepared to do so, and without attracting the notice of any of the blockading squadron. When out, Nelson, perfectly in the dark as to the course Villeneuve had taken, sought for him in vain on the coast of Egypt.

Scattered by tempests, the French fleet again took refuge in Toulon ; whence it again put to sea, when refitted and ready, joining the Spanish fleet at Cadiz.

On the courage, skill, vigilance, and judgment acceded on all hands to belong, in a pre-eminent degree, to the naval profession in this country, this system of defence relies to accomplish, against a string of chances, objects of importance so great that not a doubt or misgiving as to the result is admissible. It demands of the navy to do perfectly, and without fail, that which to do at all seems impossible. The navy is required to know the secret purposes of the enemy, in spite of distance and the broken intercourse of a state of war, even before these purposes are known to the leader who is to execute them ; nay, more, before the purpose itself is formed. On an element where man is but the sport of storms, the navy is required to lie in wait for the foe at the exact spot and moment, in spite of weather and seasons ; to see him in spite of fogs and darkness. Finally, after all the devices and reliances of the system are satisfactorily accomplished, and all difficulties subdued, it submits to the issue of a single battle, on equal terms, the fate of the war, having no resource or hope beyond.

It may here be alleged that the term *navy*, as applied to the defence of the country, means more than the sea-going vessels we have enumerated ; that it means, also, gunboats, floating batteries, and steam batteries ; and that the true system of defence for the coast requires us to provide all our harbors with some or all of these vessels, according to local circumstances ; leaving to the sea-going vessels the duty of destroying the enemy's commerce, carrying the war into the enemy's seas, and contending for the mastery of the ocean.

But such a proposition is totally distinct from that we have been considering. This is one that we regard as, in part, perfectly sound ; as containing, though not true throughout, the great principle on which the present glory of the navy proper has been built, and its future glory will depend.

We are aware that some of our ships have been blockaded within our harbors, but we are not aware that any of the high distinction achieved by that service has been gained in these blockaded ships.

On the other hand, we know that, instead of lying in harbor and contenting themselves with keeping a few more of the enemy's vessels in watch over them than their own number—instead of leaving the enemy's commerce in undisturbed enjoyment of the sea, and our own commerce without countenance or aid—they scattered themselves over the wide surface of the ocean, penetrated to the most remote seas, everywhere acting with the most brilliant success against the enemy's navigation. And we believe, moreover, that in the amount of enemy's property thus destroyed, of American property protected or recovered, and in the number of hostile ships kept in pursuit of our scattered vessels—ships, evaded if superior, and beaten if equal—they rendered benefits a thousand fold greater, to say nothing of the glory they acquired for the nation and the character they imparted to it, than any that would have resulted from a state of passiveness within the harbors.

Confident that this is the true policy as regards the employment of the navy proper, we doubt not that it will, in the future, be acted on as it has been in the past, and that the results, as regards both honor and advantage, will be expanded commensurately with its own enlargement.

In order, however, that the navy may always assume and maintain that active and energetic deportment in offensive operations, which is at the same time so consistent with its functions and so consonant with its spirit, we have shown that it must not be occupied with mere coast defence.

But if the navy is to be relieved from this home duty some other reliance must be substituted ; the navy itself requiring, for its own establishments, not less than the towns and harbors, that the defence be complete. And this brings us to consider whether the floating defences mentioned above, namely, gunboats, floating batteries, and steam batteries, constitute the best reliance.

After considering these defensive means, we will examine the properties of forts and land batteries, these being the only other well-tried resort; and, that a comparison may be instituted, we will confine ourselves to cases where the latter are properly applicable.

There are, doubtless, situations where it may be necessary for us to present a defensive array, at the same time that to do so by fortifications alone would be impracticable; and it is not, therefore, prejudging the question we are about to examine; it is neither underrating fortifications, nor overrating these floating defences, to say that these last are, some or all of them, indispensable in such positions.

Any very broad water, where deep soundings may be carried at a distance from the shores greater than effective gun range, and where no insular spot, natural or artificial, can be found or formed nearer the track of ships, will present such a situation; and we may take some of our great bays as examples.

Broad sounds and wide roadsteads, affording secure anchorage beyond good gun range from the shores, will afford examples of another sort; and harbors with very wide entrances and large surface exhibit examples of still another kind.

As, in all such cases, fortifications alone will be ineffectual, and, nevertheless, recourse to defences of some sort may be unavoidable, it has not failed to be a recommendation in the several reports on the defence of the coast, since 1818, that there should be a suitable and timely provision of appropriate floating defences. And until the invention of man shall have caused an entire revolution in the nature of maritime attack and defence, these or kindred means must be resorted to; not, however, because they are means intrinsically good, or suitable under other circumstances, but because they are the only means applicable.

In the circumstances just referred to there is no alternative, and therefore no point to be discussed. The remaining question is, whether these floating defences are to be relied on in cases that admit of defence by fortifications.

And, first, as to gunboats. Although of undoubted use in peculiar circumstances, it will hardly be contended that gunboats afford a safe reliance in harbors that can be entered by vessels of magnitude. Ships becalmed or aground might be sorely harassed, if not destroyed, by a spirited attack from this force, and there are other situations wherein it would be very effective. But harbors defended by gunboats will not be attacked in calms nor with adverse winds; and it is not easy to believe that any probable array of these craft would impede or hinder for a moment the advance of a hostile fleet. Nelson, at Trafalgar, bore down in two divisions upon the combined fleet, each division being exposed to a raking fire; and, although suffering considerably from that fire, he was able, notwithstanding, to break the hostile line and defeat his superior adversary. What, comparatively with the raking fire of the combined fleet, would be the fire of a fleet of gunboats? Opposing no effectual obstacle to approach or entrance, these small vessels, scattered and driven upon the shoals, would be kept, by the broadside of a few active vessels, at too great a distance to produce any serious effect upon the main attack by their desultory fire.

Although they might afford useful means of annoyance during a protracted occupation by the enemy of harbors that contained extensive shoal grounds and shallow bays and inlets, they would be nearly useless in resisting the first assault, and in preventing the brief operation of levying contributions, or burning or spoiling national establishments.

The true reason of this feeble defence must not, however, be misunderstood. It is not that the boats do not carry guns enough or men enough for the object, but it is because, from the comparative weakness of the vessels, the guns and the men cannot be kept in an effective position.

There are, moreover, many harbors requiring defence in which there are no shoals whereon these boats could take refuge, and in such their capture or destruction would be inevitable should there be, at the same time, no river up which they might fly, or lateral issue through which they could escape to a safe distance.

Floating batteries, of which good use might be sometimes made in peculiar situations, would, we suppose, differ from gunboats, in being larger, containing many guns, and in being stronger—that is to say, having thicker sides or bulwarks; and it has sometimes even been proposed to construct them with ball proof parapets, and with platforms open above, like, in these respects, batteries upon the shore. But, in whatever way formed, it is necessarily a part of the idea that they be strong and massive; and, consequently, that they be unwieldy, incapable of sudden change of place, and incapacitated either to advance upon a defeated foe or to evade a victorious one. We are not, of course, now speaking of batteries moved by steam.

Being denied the power of locomotion, at least for any purpose of manœuvring in face of the enemy, we are to consider these batteries as moored in position and awaiting his advance. Should the batteries be large, requiring deep water to float them, or should they be placed across or near the channel for the sake of proximity to the track of ships, the enemy would engage them at close quarters. All advantages of mobility—of concentrating his whole fleet upon one or two points, to which, under these circumstances, no relief can be sent—of greater elevation and command, would be on the side of the assailant; with no countervailing advantage to the batteries, but greater thickness of bulwarks. Whether this excess of thickness should be considered a material advantage, since the introduction of large bomb-cannon into the armament of ships, is a doubtful matter. The batteries, if anchored across the channel, would have the further advantage of a raking fire: but we have seen that the raking fire of one squadron of ships upon another advancing is by no means decisive. The power of throwing the whole assailing force upon one or two points, of pouring upon the decks of the batteries a greatly superior force of boarders, would, of themselves, seem to leave little room to doubt as to the issue.

If now we suppose these floating batteries to be smaller, so that, having a lighter draught, they might be placed near the shores or upon the shoals, they might certainly be thereby saved from the kind of attack which would prove so fatal if anchored more boldly in deep water; but they would, at the same time, lose much of their efficiency from their remoteness; and positions wherein they would be secure from being laid alongside, while they would be in a proper attitude to contribute materially to the defence of the harbor, are afforded but rarely. It is doubtful whether, as a general rule, these smaller floating batteries, notwithstanding their greater capability of endurance, would afford a better defence, gun for gun, than gunboats; or, in other words, whether this capability of endurance in the one would be more than a compensation for the power of locomotion in the other.

But whether near the shore or in the channel, whether large or small, this description of defence, owing to its fixedness, connected with the destructibility of the material of which it must be made, will be exposed to attacks analogous to those made by gunboats on ships aground. The enemy, knowing of what the defensive arrangements consist, will come provided with the requisite number of sailing or steam vessels, armed with bomb-cannon, against which the thicker bulwarks of the floating batteries would avail nothing. He would, besides, hardly fail to provide himself with bomb-ketches armed with heavy sea-mortars; and, as there could be no guarding against the effects of the long ranges of these, a few such vessels would, with great certainty, constrain the floating batteries to quit their position, abandoning every disposition approaching to a concentrated array. Not to mention other modes of attack which would seem to leave

the chances of success with the enemy, it will be noticed that this kind of defence, whether by gunboats or floating batteries, has the same intrinsic fault that an inactive defence by the navy proper has; that is to say, the enemy has it in his power to bring to the attack a force of the same nature, and at least as efficacious, as that relied on for defence; hence the necessity not of mere equality, but of *superiority*, on the part of the defence at every point liable to be attacked; and hence, also, the necessity of having an aggregate force as many times larger than that disposable by the enemy as we have important places to guard. Should we, for example, have ten such places, and the enemy threaten us with twenty ships of the line, we must have in all these places an aggregate of gunboats and floating batteries more than equivalent to two hundred ships of the line; for it will hardly be contended that these defences can be transported from one place to another as they may be respectively in danger.

But what will be the relative state of the parties if, instead of gunboats or floating batteries, we resort to steam batteries? Although much has been said of late of the great advantage that defence is to derive from this description of force, we have not been able to discover the advantages; nor do we see that sea-coast defence has been benefited in any particular by the recent improvement in steam vessels, except that, in the case before adverted to, where, from the breadth of the waters, defence from the shore would be unavailing, a more active and formidable floating defence than by gunboats and floating batteries is provided. It must be remembered that by far the greatest improvement in steam vessels consists in having adapted them to ocean navigation; and one inevitable consequence of this improvement will be that, if the defence of harbors by steam batteries be regarded as securing them from the attacks of ships of the line and frigates, or, at least, of placing the defence quite above that kind of attack, they will no longer be attacked by sailing vessels, but by steam vessels, similar in all warlike properties to those relied on for defence.

Not only is there no impediment to transferring these vessels across the ocean, but the rapidity and certainty of these transfers are such as to enjoin a state of the most perfect readiness everywhere and at all times, and also a complete independence of arrangement at each particular point; both the state of preparation and the independence of arrangement being much more important than when the enemy's motions were governed by the uncertain favor of winds and weather.

It is not easy to conceive of any important properties belonging to steam batteries acting defensively that the attacking steam vessels may not bring with them, or, at least, may not have imparted to them on their arrival upon the coast, unless it should be thought proper to give to the former a greater thickness of bulwark than would be admissible in sea-going vessels.

But the peculiar advantage conferred by steam lies in the facility of moving with promptitude and rapidity; and any attempts to strengthen the harbor vessels by thickening their bulwarks considerably would unavoidably lessen their mobility, thereby partially neutralizing the advantage sought. At the same time, it is extremely doubtful whether any benefit would be derived from the thicker sides. It is probable that the best kind of bulwark for these vessels and all others is that which will be just proof against grape and canister shot fired from moderate distances; because, with such bulwarks, a shell fired from a bomb-cannon within a reasonable distance would pierce both sides; that is to say, would go in on one side of the ship and out at the opposite, producing no greater effect than a solid shot of the same calibre, while, with thickened sides, every shell would lodge in the timbers, and produce terrible ravages by bursting.

In the practice with these missiles in this country it has been found difficult to lodge a shell in thin targets, even when the load of the gun was so reduced as to increase materially the uncertainty of aim. As it is probable, therefore, that the protection from solid shot afforded by massive bulwarks would be more

than counterbalanced by the greater injury horizontal shells would inflict by means of these bulwarks, we may conclude that the harbor steam battery will not differ in this respect materially from the attacking steamships, and, if they do differ in having more solid and impervious bulwarks, that no advantage over the enemy will result therefrom. We come, therefore, to the same result as when considering the application of the other kinds of floating force to the defence of harbors; and this result is, that there is no way of placing the coast in a condition of reasonable security but by having at any point the enemy may happen to select a force in perfect readiness which shall be superior to that brought to the attack.

The reason of this coincidence of result is, that no peculiarity in form or details can disguise the difficulties or essentially modify the conditions inseparable from the nature of a floating force.

Buoyancy is a condition necessary to every variety of the force, and to observe this condition a common material must be used in each—a material that is combustible, weak, and penetrable to missiles. If the weakness and penetrability be in part remedied by an increase of the quantity of the material, it must be at the sacrifice of buoyancy, activity, and speed—properties of great value. If a small draught of water be desired, it can only be obtained at the expense of that concentration of power which is a great and almost characteristic quality of naval armament.

It might not be strictly true to say that as much would be lost in one respect as would be gained in another; but, though modifications of this floating force, made with a view to adapt it to peculiar services, will somewhat disturb the equilibrium of the several kinds, there will still be no great disparity when acting in their appropriate way, and a little superadded force to the weaker party will restore the balance. None of these modifications, it should be observed, touch, on the one hand, the means whereby injury is inflicted, nor, on the other, the susceptibility to injury. All are still timber structures, carrying a common armament.

The necessity of having at each point a force at least equal to the attacking force will require large preparations on any supposition. With the navy proper, however, with gunboats and floating batteries, something has already been done; the existing navy will be an important contribution. Small vessels supplied by commerce would afford tolerable substitutes for gunboats, and from the class of merchant ships many vessels might be drawn for service as floating batteries; still there will remain great efforts to be made and great amounts to be expended, to complete the defensive array. But a reliance on steam batteries would lead to expenditure vastly greater, because with them all has yet to be provided. Having at present no force of this kind on hand, (or next to none,) the preparation by the enemy of (say) twenty steam frigates would require the construction of two hundred of equal force on our part, supposing that we design to cover but ten of our principal harbors, leaving all others at his mercy.

Having shown that steam batteries cannot be substituted for shore defences, we will here add that they will, on the other hand, in certain cases necessarily increase the number of these defences, and in other cases augment their force. Channels which admitted only small vessels-of-war would, in peculiar positions, need no defence; in other positions their defence might be safely trusted to works of moderate force. The introduction of these vessels of small draught and great power requires, however, that these passages should be defended and defended adequately.

We should not have gone so much at length into a branch of our subject wherein the general conclusions appear to be so obvious and incontrovertible, but for the prevalence of opinions which we consider not erroneous merely, but highly dangerous, and which, we think, must give way before a full exhibition of the truth. We do not anticipate any formidable objections to the positions

assumed nor to the illustrations ; but even should all these, in the form we have presented them, be objected to, we may still challenge opposition to the following broad propositions, namely :

1st. If the sea-coast is to be defended by naval means exclusively, the defensive force at each point deemed worthy of protection must be at least equal *in power* to the attacking force.

2d. As, from the nature of the case, there can be no reason for expecting an attack on one of these points rather than on another, and no time for transferring our state of preparation from one to another after an attack has been declared, each of them must have assigned to it the requisite means ; and,

3d. Consequently this system demands a power in the defence as many times greater than that in the attack as there are points to be covered.

Believing that a well-digested system of fortifications will save the country from the danger attending every form of defence by naval means, and the intolerable expense of a full provision of those means, we will now endeavor to show that such a system is worthy of all reliance.

There has been but one practice among nations as to the defence of ports and harbors ; and that has been a resort to fortifications. All the experience that history exhibits is on one side only ; it is the opposition of forts, or other works comprehended by the term *fortification*, to attacks by vessels ; and although history affords some instances wherein this defence has not availed, we see that the resort is still the same. No nation omits covering the exposed points upon her seaboard with fortifications, nor hesitates in confiding in them.

In opposition to this mode of defence much stress is laid on certain successful attacks that have been made by ships on works deemed strong. We have no doubt that all such results might be accounted for by circumstances independent of the naked question of relative strength ; but at any rate, when carefully considered, how little do these results prove, in comparison with numerous other instances, in which there was an immense disparity of force in favor of vessels that have been signally defeated. These latter instances are those that should be received as a test of the actual relation between the two kinds of force ; not certainly because they were successful, but because the smaller the work, its armament, its garrison, the less the probability that any extraneous influence has been in operation. A single gun behind a parapet, provided its position be a fair one, and the parapet be proof, need, as regards its contest with ships, owe nothing else to the art of fortification ; and its effect will be the same whether the battery were fresh from the hands of the ablest engineer of the age, or were erected at the dawn of the art. The gun is in a position to be used with effect ; the men are as fully protected by the parapet as the service of the gun will allow ; they are brave and skilful, and there is nothing to prevent their doing their duty to the utmost. These are all conditions easily fulfilled, and therefore likely to be so. The state of things is not less just and fair toward the vessel ; she chooses her time and opportunity ; the battery goes not to the ship, but the ship to the battery ; taking the wind, the tide, the sea—all, as she would have them ; her condition and discipline are perfect, and her crew courageous and adroit. Nothing, under such circumstances, can prevent the just issue of battle but some extraordinary accident—possible, indeed, to either party, but easily recognized when occurring.

The contest between larger works and heavy squadrons may be much more complicated affairs, the cause of disaster to the former being often traceable to potent, though not always obvious, influences. The fortifications may have been absurdly planned originally or badly executed, for there has at all times been in this profession, as in others, much scope given to quackery ; they may have been erected at a time when the ships-of-war, against which they were provided, were very different things from the lofty line-of-battle ships of modern times ; a long peace or long impunity may have left them in a state wholly un-

prepared for the sudden use of their strength; the command may have been intrusted to persons ignorant alike of the amount of power in their hands and of the mode of exercising it; the garrison may have been undisciplined or mutinous—the populace discontented or disloyal; the clamor of frightened citizens may have caused a premature surrender: all these, or any of them, may have produced the issue, leaving the question of relative power untouched.

While there can be no doubt that these and other deteriorating influences may have occasionally operated to the prejudice of fortifications, and that these were likely to be more numerous and more controlling as the works were more extensive, it is certain that there can be no influence acting in a reverse direction upon them; that is to say, none making them stronger and more efficient than they ought to be. There can be no favorable influence of such a nature, for example, as to make the simple one-gun battery before mentioned equivalent to a battery (say) ten times as large.

It must not be supposed, from what we have said in relation to larger fortifications, that their magnitude necessarily involves imperfection or weakness; nor, because we have considered small and simple works as affording the best solution to the question of relative force, must it be inferred that small works are suited to all circumstances. We speak here in reference merely to the judgment we are entitled to form of the relative power of these antagonist forces from their contests as exhibited in history. In instances of the latter sort, there cannot, from the nature of the case, be any important influence operating of which we are ignorant, or for which we cannot make due allowances; while, in examples of the former kind, we may be in the dark as to many vital matters.

These observations have been deemed necessary, because, in judging of this matter, it might not be so obvious that certain brilliant and striking results should not be adopted as affording the true test of relative power. It would be more natural to turn to Copenhagen and Algiers, as indicating where the power lies, than to Charleston and Stonington; and yet these latter, as indices, would be true, and the former false.

We will now turn to certain examples:

"The name of Martello tower was adopted in consequence of the good defence made by a small round tower in the Bay of Martello, in Corsica, in the year 1794, which, although armed with one heavy gun only, beat off one or two British ships-of-war without sustaining any material injury from their fire. But this circumstance ought merely to have proved the superiority which guns on shore must always, in certain situations, possess over those of shipping, no matter whether the former are mounted on a tower or not. That this is a just decision will perhaps be readily allowed by all who are acquainted with the following equally remarkable, but less generally known fact, which occurred about twelve years afterwards in the same part of the world."*

"Sir Sidney Smith, in the *Pompée*, an eighty-gun ship, the *Hydra*, of thirty-eight guns, Captain Manby, and another frigate, anchored about eight hundred yards from a battery of two guns, situated on the extremity of Cape Licosa, and protected from assault by a tower in which were five and twenty French soldiers, commanded by a lieutenant.

"The line-of-battle ship and the frigates fired successive broadsides till their ammunition was nearly expended; the battery continually replying with a slow but destructive effect. The *Pompée*, at which ship alone it directed its fire, had forty shot in her hull; her mizen topmast carried away; a lieutenant, midshipman, and five men killed, and thirty men wounded. At length force proving ineffectual, negotiation was resorted to, and after some hours' parley, the officer,

a Corsican, and relative of Napoleon, capitulated. It then appeared that the carriage of one of the two guns had failed on the second shot, and the gun had subsequently been fired lying on the sill of the embrasure; so that in fact the attack of an eighty-gun ship and two frigates had been resisted by a single piece of ordnance."—(*Journal of Sieges*, by Colonel John T. Jones.)

"The Corsican tower above mentioned, which had, in like manner, completely baffled a naval cannonade, was very soon found to surrender when attacked by land; not, however, before a small battery had been made [erected] to reduce it."—(*Pasley's Course*, vol. iii.)

Here are two examples:

1st. A single heavy gun, mounted on a tower, beat off one or two British ships.

2d. A barbette battery, containing two guns, beat off a British eighty-gun ship supported by two frigates.

It would seem that no exception can possibly be taken to either instance, as trials of relative power. There is no complication of circumstances on one side or the other; nothing to confuse or mislead; all is perfectly simple and plain. A small body of artillery, judiciously posted on the shore, is attacked by armed vessels bearing forty or fifty times as many guns; and the ships, unable to produce any effect in consequence, are beaten off with loss.

The cases present no peculiar advantage on the side of the batteries either as regards position or quality; for both works were immediately reduced by a land attack; that which the eighty-gun ship and two frigates were unable to effect, being immediately accomplished by landing two field-pieces, with a very small portion of the crew of one of the vessels.

On the other hand, there was no peculiar disadvantage on the part of the ships, as the time and mode of attack were of their own choice.

In order that there might be no unjust disparagement of the vessels, in the manner of representing the affairs, the language of British military writers (the ships being British) has been exactly quoted.—(See *Pasley's Course of Elementary Fortifications*, vol. ii., and *Journal of Sieges*, by Colonel John T. Jones.)

Had the representation of these actions been taken from the victorious party, the result would have appeared still more to the disadvantage of the ships.

The circumstances attending the attack and defence of Copenhagen, in April, 1801, seem to have been the following:

On the northeast side of the city (the only side exposed to attack from heavy ships) there lies a shoal spreading outward from the walls, about three-quarters of a mile in the narrowest part. Through this shoal there runs, in a northeast and by north direction, a narrow channel connecting the basin, in the heart of the city, with deep water. Were it not for this shoal, vessels might approach even to the walls of the city, on a length of about one and a half mile; as it is, they can get no nearer, in any place, than about three-quarters of a mile, without following the channel just mentioned. As the edge of the shoal lies nearly north and south, and the channel passes through it in a northeast-by-north direction, the great mass of the shoal is to the southward, or on the right hand side of the channel. We will call this the southern shoal. The "Three-crown battery" is situated upon this southern shoal and near the channel.

The Danish defences consisted—

1st. Of the fortifications on this side of the city, including the Three-crown battery; Nelson estimated the batteries supporting the Danish vessels at about ninety guns.

2d. Of four sail of the line, mounting 282 guns, and one frigate and two sloops, mounting 76 guns; making 358 guns. All these vessels lying in the channel before mentioned, and some of them near its mouth; they constituted the left of the Danish floating defences, and were thus posted to defend the entrance to the inner harbor or basin.

3d. Of a line of floating defences, of various kinds, moored near the edge of the

southern shoal. They were eighteen in number, as follows, counting from the right or southern extremity: 1st, a block-ship of 56 guns; 2d, a block-ship of 48 guns; 3d, a praam of 20 guns; 4th, a praam of 20 guns; 5th, a block-ship of 48 guns; 6th, a raft of 20 guns; 7th, a block-ship of 22 guns; 8th, a raft of 20 guns; 9th, a block-ship of 62 guns; 10th, a small vessel of 6 guns; 11th, a raft of 24 guns; 12th, a praam of 20 guns; 13th, a ship of the line of 74 guns; 14th, a block-ship of 26 guns; 15th, a raft of 18 guns; 16th, a ship of the line of 60 guns; 17th, a block-ship of 64 guns; 18th, a "frigate" of 20 guns; total in this line 628 guns. These vessels were moored in a line extending south from a point outside and a little to the southward of the Three-crown battery; and the part of the line nearest the walls was not less than three-quarters of a mile distant.

Lord Nelson carried to the attack the Elephant, 74 guns; Defiance, 74; Monarch, 74; Bellona, 74; Edgar, 74; Russell, 74; Ganges, 74; Glutton, 54; Isis, 50; Agamemnon, 64; Polyphemus, 74; Ardent, 64; Amazon, 38; Desiree, 38; Blanche, 36; Alcmena, 32; Dart, 30; Arrow, 18; Cruiser, 18; Harpy, 18; Zephyr, 14; Otter, 14; Discovery, 16; Sulphur, 10; Hecla, 10; Explosion, 8; Zebra, 16; Terror, 10; Volcano, 8; making a total of 1,074 guns, besides a few in gunboats. The Agamemnon did not get into action; which reduces the force employed to 1,010 guns. The Bellona and Russell grounded; but Lord Nelson says, "although not in the situation assigned them, yet they were so placed as to be of good service."

With this force Lord Nelson engaged the line of floating defences that was moored near the edge of the southern shoal. He approached from the south, with a fair wind; and as his leading vessel got abreast of the most southern of the Danish line she anchored by the stern. The second English vessel passed on until she had reached the next position, when she anchored, also, in the same way; and thus, inverting his line as he extended it, he brought his whole force against the outer and southern part of the Danish force. His line did not reach as far northward as the Three-crown battery, and mouth of the channel; for, he says, in speaking of the grounding of the Bellona, Russell, and Agamemnon: "These accidents prevented the extension of our line by the three ships before mentioned, who would, I am confident, have silenced the Crown islands, (Three-crown battery,) the outer ships in the harbor's mouth, and prevented the heavy loss in the Defiance and Monarch."

Concentrating, as he did, the force of 1,010 guns upon a portion of the Danish array, not only inferior to him by 382 guns, but so situated as to be beyond the scope of succor, and without a chance of escape, Lord Nelson had no reason to doubt that signal success would crown his able arrangement. Every vessel in this outer Danish line was taken or destroyed, except one or two smaller vessels, which cut and ran in under shelter of the fortifications.

The vessels lying in the narrow channel could participate in no material degree in the action, because the British line did not reach abreast of them; and because, not being advanced beyond the general direction of the Danish line, but, on the contrary, retired behind it, they could not act upon any of the British vessels, except, perhaps, obliquely upon two or three of the most northern ships. But had all the Danish vessels that were lying in the narrow channel been mingled, from the first, with the line that was destroyed, the result would probably have been still more to the advantage of the assailants; that is to say, these vessels, also, would have been captured or destroyed; because, not only would the aggregate Danish force of 986 guns have been inferior to the 1,010 guns of the British, but it would also have been without the ability to counteract the power of concentration possessed by the latter, whereby the whole force would have acted on parts of the Danish line in succession.

For the same reason that the squadron which lay in the narrow channel could not materially aid in resisting the attack made on the line of floating defences

anchored along the edge of the shoal, the action of the Three-crown battery, and the guns on the shore must have been greatly restricted. Situated *upon the shoal*, the Three-crown battery was *behind* the Danish line, which consequently masked it, and also the shore batteries, from a view of the English line. Under such circumstances it is not conceivable that the batteries could be used with effect; and the commander of the Danish forces says expressly that the Three-crown battery "*did not come at all into action*," and a chronicler of the times states that the fortifications of the town "*were of no service while the action lasted; they began to fire when the enemy took possession of the abandoned ships, but it was at the same time that the parley appeared*." In proportion as the Danish vessels passed into the hands of the English, as some were burnt, and others blown up, the scope of the batteries would enlarge, and their power be felt; but just as all impediment of this sort had been removed, Lord Nelson himself proposed the cessation of hostilities, and the action ceased. It might be profitable to discuss the probable consequences of a continuance of the action; to inquire why it was that Lord Nelson, after he had conquered two-thirds of the 986 floating guns opposed to him, did not pursue his advantage, and concentrate his 1,010 guns upon the 358 guns, which were all that remained of the floating defences of the Danes, especially as the wind was in favor of such a manœuvre. But having already devoted too much space to this particular contest, we will suppose some dictate of policy, perhaps of humanity, induced him to close the contest, relying on the severe blow he had already inflicted, and the commanding tone it enabled him to assume for such a termination of the pending negotiation as the interest or policy of Great Britain demanded.

It is important, however, yet to notice that, as soon as the negotiation opened. Lord Nelson's vessels passed out of the reach of the Three-crown battery as fast as they could be withdrawn. Lord Nelson himself states that this battery was not silenced.

A British writer, speaking of this crisis, says: "It must not, however, be concealed that Lord Nelson, at the time he dictated this note to the Dane, was placed in rather awkward and difficult circumstances; the principal batteries, as well as the ships which were stationed at the mouth of the harbor, were still unconquered; two of his own vessels were aground, and exposed to a heavy fire; others, if the battle continued, might be exposed to a similar fate; while he found it would be scarcely practicable to bring off the prizes under the fire of the batteries. These considerations, undoubtedly, influenced him in resolving to endeavor to put a stop to hostilities, in addition to the instructions he had to spare the Danes, and the respect he might have felt for their brave defence."—(Campbell's Naval History, vol. vii, p. 203.)

The circumstances above detailed show clearly:

1st. That the battle of Copenhagen was fought between an English fleet mounting 1,010 guns, and a Danish line of floating defences, mounting 628 guns: and that all the latter were conquered.

2d. That the Danish line was attacked in such a manner that none of the fixed batteries in the system of defence could participate in the contest, which was carried on up to the surrender of the Danish line, almost exclusively between vessels. It appears that a few of the smaller vessels, under Captain Riou, occupying the northern extremity of the English line, were under the fire of the Three-crown battery. The loss being very severe, he was obliged to retreat.

3d. That as soon as the batteries were unmasked and began to act the battle was closed, by Lord Nelson opening a parley.

4th. That, consequently, it was in no sense a contest between ships and batteries, or a triumph of ships over batteries, and affords no ground for judging of their relative power.

5th. That it illustrates, strikingly, the advantage that a fleet possesses over a stationary line of floating defences. Lord Nelson was superior to the whole of

his adversary's floating force; but not being disposed to run any unnecessary hazard he directed all his force upon a part of the Danish line, which was, of course, defeated; and had there been no other than a floating force present, so of course would have been the remainder, had it been of twice the strength it was. This example fully confirms what we have before urged on this topic.

In estimating the respective forces above, we have set down the vessels of both parties at their rate: that is to say, a ship called a seventy-four we have reckoned at 74 guns.

We now proceed to examine a great instance of naval success, in which there is no room to doubt the extent to which fortifications were engaged; this instance is the attack on Algiers in 1816.

The attack was made by the combined English and Dutch fleets, mounting about one thousand guns, under the command of Lord Exmouth.

In the fortifications that looked towards the water, there are enumerated in a plan, supposed to be authentic, 320 guns; but not more than 200 of these could act upon the fleet as it lay. The ratio of the forces engaged, therefore, as expressed by the number of guns, (saying nothing of the calibres, of which we know nothing,) was about as 5 to 2. The action continued from a quarter before three until nine, without intermission, and did not cease altogether until half-past eleven.

It is very certain that the effects of the fire upon the Algerine shipping and town were very severe, because we know that all the shipping was destroyed, excepting some small vessels; and we know also that Lord Exmouth dictated the terms of the treaty that followed.

Honorable as this result was to the combined fleets, and happy as it was for the cause of humanity, there are, nevertheless, technical circumstances connected with it that excite doubts as to how much of the final result was due to physical chastisement, to moral effect, to inherent defects in the defences, and to ignorance in the use of these defences, such as they were. That the loss in killed and wounded in the city and works was great is probable, because we are informed that a very great addition had been made to the garrison, in preparation for the attack, under some impression, no doubt, that a landing would be attempted. For the service of the guns there were needed but 3,000 or 4,000 men, at the utmost. An accumulation beyond that number would add nothing to the vigor of defence, while, by causing an increase of the casualties, it would heighten the terrors of the combat. The depressing effect of this loss of life in the batteries, and of the burning of buildings within the town and about the mole, was of course increased by the entire destruction of the Algerine fleet, anchored within the mole.

We have no means of judging of the actual condition of the works; nor of their fitness for the task of contending with the heavy ships of modern times.

The forts and batteries on the shore were probably too elevated to be commanded even by the largest of the assailing ships; and, provided these guns were covered with a proof parapet, they may be regarded as being well situated.

But more than half of the guns engaged were in the Mole-head battery; and the mode of attack adopted, especially by the Queen Charlotte, of 110 guns, was calculated to test, in the severest manner, the principles on which this work had been planned. She so placed herself within "fifty yards" of the extremity of this battery, that she could either rake or take in reverse every part of it. If she, at the same time, commanded the battery—that is to say, if, from her spar deck, she could look down upon its platform—then she must at once, with her grape and canister, have driven the garrison from that platform, leaving only the lower and covered tier of guns, if there were such a tier, for service. With our imperfect knowledge of the fortifications, all this must, however, be left to conjecture.

But there are matters connected with the service of the batteries which are not conjecture. Not a shot was fired until the Queen Charlotte had anchored.

What a different vessel, when she anchored, might not this ship have been, if the Mole-head battery had employed its fire of more than 100 guns in raking her, from the time she arrived within a mile and a half until she had anchored within fifty yards? How different might have been the condition of the fleet, generally, if they had been subjected, during the approach, and while assuming their stations, to the raking fire of all the 200 guns?

It does not appear that a single hot shot was fired from the batteries.

We might almost rest on this fact, and assert that a defence which had failed to provide itself with this auxiliary means, must have been carried on in disregard, if not in violation, of all rules, all knowledge, and all experience; that it was probably without plan or combination, and, not less probable, without preparation in other particulars of importance scarcely inferior.

Before leaving this example it may be well to inquire what, after all, was the effect of these batteries upon the ships, compared with the effect of ships upon ships.

In the battle of the Nile, the French fleet, rated at 1,190 guns, caused a loss in Nelson's fleet of 895 killed and wounded; which is in the proportion of ten French guns to less than eight Englishmen killed and wounded. In the battle of Trafalgar the French fleet carried not less than 3,000 guns, and they caused a loss to the English of 1,587 killed and wounded; which is in the proportion of ten guns to less than six killed and wounded. In this affair of Algiers, with a force not exceeding 200 guns, the batteries caused a loss of 883 killed and wounded, being in the proportion of 10 guns to 44 men; and, if we take into account every gun that was pointed upon the bay, (say 350 guns,) the proportion will be 10 guns to 25 men; being an effect more than three times as great as that produced by the French ships at the battle of the Nile, and more than four times as great as that produced by the ships of the same nation at Trafalgar.

While reflecting on the circumstances of this battle the mind is not satisfied with any reasons that present themselves for the withdrawal of Lord Exmouth, the moment the land wind enabled him to do so. On the supposition of entire success on his part, it is not understood why he should feel the great anxiety he states himself to have been under that this wind should spring up. "Providence at this interval," (between 10 and 11 at night,) "gave to my anxious wishes the usual land wind, common in this bay; and my expectations were completed. We were all hands employed warping and towing off, and, by the help of the light air, the whole were under sail, and came to anchor out of the reach of shells about two in the morning, after twelve hours of incessant labor."

Now, if anything had been decided by the action, it must have been one of two things: either the ships were victorious, or the batteries were so. If the ships were completely victorious, it would seem to have been judicious for them to remain where they were, in order, if there was to be any more fighting, to be ready to press their advantage; and, especially, in order to maintain the ascendancy, by preventing the remounting of guns, repairing of batteries, and resupplying them munitions, &c.

Had the people possessed the inflexibility report ascribed to the Dey, and had they set zealously about the work of preparation for a new contest, it might not have been easy for Lord Exmouth, in the condition to which his ships are acknowledged, by authentic accounts, to have been reduced, to enforce his demands. It is not understood, therefore, why, if he had been so successful as to be certain that his end was attained, he should be so anxious to get out of gunshot, when, by so doing, he involved the issue in more or less doubt and hazard.

He relied on the effects produced on the people by his dreadful cannonade, and the result proves that he was right; but his anxiety to clear the vessels

from the contest shows that there was a power still unconquered, which he thought it better to leave to be restrained by the suffering population of the city, than keep in a state of exasperation and activity by his presence. What was this power but an unsubdued energy in the batteries?

The true solution of the question is, then, not so much the amount of injury done on the one side or the other—particularly as there was, on the one side, a city to suffer, as well as the batteries—as the relative efficiency of the parties when the battle closed at about eleven o'clock. All political agitation and popular clamor aside, what would have been the result had the fight been continued, or even had Lord Exmouth renewed it next morning?

These are questions that can be answered only on conjecture; but the manner the battle ended certainly leaves room for many doubts whether, had the subsequent demands of Lord Exmouth been rejected, he had it in his power to enforce them by his ships: whether, indeed, if he had renewed the fight, he would not have been signally defeated.

On the whole, we do not think that this battle, although it stands preeminent as an example of naval success over batteries, presents any arguments to shake the confidence which fortifications, well situated, well planned, and well fought, deserve, as the defences of a seaboard.

GIBRALTAR.

The attack on the water batteries of Gibraltar in September, 1782, by the French and Spanish floating batteries, is a well known instance of the power of guns on shore.

These floating batteries had been rendered, as was supposed, shot-proof and shell-proof, by several additional thicknesses of timber to the sides, and by covering the decks with a roof of sloping timbers.

They mounted 142 guns on the engaged side, with 70 in reserve to replace any that might be dismounted. They were anchored at the distance of about 1,000 yards from the walls, and were opposed by about 85 guns.

After a protracted cannonade, nine of the floating batteries were burnt by hot shot from the shore, and the tenth, having been taken possession of by the victors, was set on fire by them.

No material injury was done to the works of the town by their fire; and only eighty-five men and officers were killed and wounded by the fire from these vessels, together with a very violent cannonade and bombardment from the siege batteries.

BATTLE OF ALGESIRAS.

On the 6th July, 1801, the French Admiral Lenois was lying at anchor off the town of Algeiras with two ships of 80 guns, one of 74 guns, and one frigate. To the south of him, on a small island, was a battery called the Green Island battery, mounting seven 18 and 24-pounders; and to the north of him, on the main, another battery called St. Jaques's battery, mounting five 18-pounders. There were, besides, fourteen Spanish gunboats anchored near, making a total of 306 guns afloat and 12 guns in battery—together, 318 guns.

Sir James Saumarez, hearing that Lenois was in this position, advanced against him from Cadiz with two ships of 80 guns, four of 74 guns, one frigate, and a lugger—in all, 502 guns. On his approach, Lenois, who was anchored in a line nearly north and south, at some distance from the shore, cut his cables and ran into shoal water, to prevent being doubled upon by the British line; this manœuvre, at the same time, entirely unmasked the fire of the batteries.

The Hannibal, one of the British 74's, in attempting to close with the French admiral, touched the ground and could not be floated off. She, however, con-

tinued the fight with great obstinacy, even for a considerable time after she was deserted by her consorts. Not being able to double upon the French line, an attempt was made to assault the Green Isle battery, which, being badly served by the Spaniards, had nearly ceased firing. But this attempt was anticipated by the arrival at the island of a party sent from the French frigate lying near, and the assault was defeated, with the loss to the English of one boat sunk and another taken, the Frenchmen renewing with vigor the fire of the battery. At the north end of the line the French admiral was aided by seven gunboats, which took so active a part in the fight that five of them were sunk or rendered unserviceable. The St. Jaques battery being, however, served sluggishly by the Spaniards, the French sent a party from the Dessaix to impart greater activity and effect.

After the combat had continued about six hours, the British squadron drew off greatly damaged, leaving the Hannibal 74 alone and aground; and she, after suffering great loss, was obliged to strike. The French insist that the Pompee, an English ship of 80 guns, had struck her colors, but, as they could not take possession, she drifted off and was then towed away; it is believed she was entirely dismasted.

We do not know the loss in the French squadron, but the killed, wounded, and missing in the English fleet amounted to 375 men, being more than twelve men for every ten guns against them, and being twice as great, in proportion, as the English loss in the battle of Trafalgar.

In this battle of Algeiras there were 502 English guns afloat, acting against 306 French guns afloat. As the English chose their own time for the attack, and had the wind, it is only reasonable to suppose that 306 of the English guns were a match for the 306 guns in the French vessels. This will leave 196 English guns afloat opposed to the 12 guns in the batteries, or, reckoning one side only of each ship, it shows 98 guns in the British fleet to have been over-matched by the twelve guns in the batteries.

There never was a more signal and complete discomfiture; and it will admit of no other explanation than that just given, namely, that the two small batteries, one of 5 and the other of 7 guns, partly 18 and partly 24-pounders, more than compensated for the difference in favor of the British fleet of 196 guns.

The Hannibal got aground, it is true, but she continued to use her guns with the best effect until she surrendered; and, even on the supposition that this ship was useless after she grounded, the British had still an excess of 122 guns over the French fleet and batteries.

These batteries were well placed, and probably well planned and constructed, but there was nothing extraordinary about them; their condition before the fight was complained of by Admiral Lenois; and they were badly fought in the early part of the action; still the 12 guns on shore were found to be more than equivalent for two seventy-fours and one frigate.

BATTLE OF FUENTERABIA.

This recent affair introduces steam batteries to our notice.

On the 11th July, 1836, six armed steamers, together with two British and several Spanish gunboats, attacked the little town of Fuenterrabia. The place is surrounded only by an old wall; and two guns of small calibre, to which, on the evening of the attack, a third gun of larger calibre was added, formed the entire of its artillery. The squadron cannonaded this place during a whole day and effected absolutely nothing beyond unroofing and demolishing a few poor and paltry houses, not worth perhaps the ammunition wasted in the attack. What may have been the number of guns and weight of metal which the assailants brought is unknown; though the superiority, independent of the superior

weight of metal, must have been at least ten to one; but not the slightest military result was obtained.—(See United Service Journal, August, 1836, page 531.)

We will now turn to affairs of a similar character on our own coast.

In June, 1776, Sir Peter Parker, commanding a squadron of two ships of 50 guns, four of 28 guns, two of 20 guns, and a bomb-ketch—in all (according to their rate) 252 guns—attacked Fort Moultrie, in Charleston harbor, South Carolina.

It is stated that the fort mounted “about thirty pieces of heavy artillery.” Three of the smaller vessels were aground for a time during the action; and one of them could not be floated off, and was in consequence burnt by the English. Deducting this vessel as not contributing to the attack, and supposing that the other two were engaged but half the time, the English force may be estimated at 200 guns; or, reckoning one broadside only, at 100 guns against 30 guns.

The English were defeated with great loss of life, and injury to the vessels; while the fort suffered in no material degree, and lost but 30 men. The killed and wounded in the squadron were reported by the commodore to be 205; being for every ten guns employed against them more than 68 men killed and wounded; a loss more than eleven times as great, in proportion to the opposing force, as the loss at the battle of Trafalgar.

In September, 1814, a squadron of small vessels, consisting of two ships and two brigs, mounting about 90 guns, attacked Fort Boyer, at the mouth of Mobile bay. A false attack was at the same time made by a party of marines, artillery, and Indians, on the land side. The fort was very small, and could not have mounted more than twenty guns on all sides, nor more than fifteen guns on the water fronts. The action continued between two and three hours, when one of the ships being so injured as to be unmanageable, drifted ashore under the guns, and was abandoned and burnt by the English; the other vessels retreated after suffering severely. There were ten men killed and wounded in the fort; the loss on the other part is not known.

The affair of Stonington during the last war affords another instance of successful defence by a battery. In this case there were only two guns, (eighteen-pounders,) in a battery which was only three feet high and without embrasures. The battery, being manned exclusively by citizen volunteers from the town, repelled a persevering attack of a sloop-of-war, causing serious loss and damage, but suffering none.

The only other instance we will adduce is that of the late attack on the castle of St. Juan de Ulloa. Having before us a plan of this work, made on the spot after the surrender, by a French engineer officer who was one of the expedition; having also his official account of the affair, as well as narratives by several eye-witnesses, we can fully understand the circumstances attending the operations, and are liable to no material errors.

On the 27th of November, 1838, Admiral Baudin anchored at the distance of about seven-eighths of a mile in a northeast direction from the castle, with the frigates *La Néréide*, of 52 guns, *La Gloire*, of 52 guns, and *L'Iphigénie*, of 60 guns, and, after being a short time in action, he was joined by *La Créole*, of 24 guns; in all, 188 guns, according to the rate of the ships. In a position nearly north from the castle, and at a distance of more than a mile, two bomb-ketches, carrying each two large mortars, were anchored. The wind being adverse, all the vessels were towed into position by two armed steamboats belonging to the squadron. “It was lucky for us,” says the reporter, “that the Mexicans did not disturb this operation, which lasted near two hours, and that they permitted us to commence the fire.” He further says: “We were exposed to the fire of one 24-pounder, five 16-pounders, seven 12-pounders, one 8-pounder, and five 18-pounder carronades—in all, 19 pieces *only*.” In order the better to judge of these batteries, we will convert them, in proportion to the weight of balls, into 24-pounders; and we find these 19 guns equivalent to less than 12 guns of that

calibre. But we must remark, that, although this simplifies the expression of force, it presents it greatly exaggerated; it represents, for example, three 8-pounders as equivalent to one 24-pounder; whereas, at the distance the parties were engaged, (an efficient distance for a 24-pounder,) the 8-pounders would be nearly harmless. It represents also the 18-pounder carronades as possessing each three-fourths the power of a long 24-pounder; whereas at that distance they would not be better than the 8-pounders, if so good. Although the above estimate of the force of the batteries is too great by full one-third, we will, nevertheless, let it stand as representing that force.

There were, then, twelve 24-pounders engaged against 94 guns (estimating for one broadside only of each ship) and 4 sea-mortars. During the action a shell caused the magazine in the cavalier to explode, whereby three of the nineteen guns were destroyed, reducing the force to about ten 24-pounders.

Considering the manner in which this work was defended, it would not have been surprising if the ships had prevailed by mere dint of their guns; but our author states, expressly, that though the accident just mentioned completely extinguished the fire of the cavalier, still "the greater part of the other pieces which could see the ships, to the number of sixteen, continued to fire till the end of the action." They were not dismounted, therefore, and the loss of life at them could not have been great. What, then, was the cause of the surrender of the castle?

Much has been said of the great use made by the ships of horizontal shells, or shells fired at low angles from large guns; and it is a prevailing idea that the work was torn to pieces, or greatly dilapidated by these missiles. This engineer officer states that, on visiting the castle after the cannonade, he found "it had been more injured by the French balls and shells than he had expected; still the casemates in the curtains, serving as barracks for the troops, were intact." "Of 187 guns found in the fort, 102 were still serviceable; 29 only had been dismounted by the French fire. The heaviest injury was sustained by the cavalier" (where a magazine exploded) "in bastion No. 2; in battery No. 5," (where another magazine was blown up,) "and the officers' quarters." They found in the castle twenty-five men whose wounds were too severe to permit their removal with the rest of the garrison.

Of the twenty-nine guns dismounted, five were thrown down with the cavalier; the remaining twenty-four guns were no doubt situated in parts of the work opposite to the attack, being pointed in other directions, and were struck by shots or shells that had passed over the walls facing the ships. There is reason to suppose that of the remaining sixteen guns pointed at the French, none were dismounted; and we know that most of them continued to fire till the end of the action.

The two explosions *may* certainly have been caused by shells fired at low angles from Paixhan guns. But it is much more likely they were caused by shells from the sea-mortars, because these last were much larger, and therefore more likely to break through the masonry; because, being fired at high angles, they would fall vertically upon the magazines, which were less protected on the top than on the sides; and because there were more of these large shells fired than of the small ones, in the ratio of 302 to 117.

But, considering that the cannonade and bombardment lasted about six hours, and that 8,250 shot and shells were fired by the French, it is extraordinary that there were no more than two explosions of magazines and that no greater injury was done the fort, since it is certain that there were no less than six other similar magazines situated on the rampart, in different parts of the work, not one of which was shell-proof. The surrender, after these explosions, was a very natural event, with a governor and garrison who seem to have known as little about the proper preparation for such contests as about the mode of conducting them. The second explosion must have satisfied them, if the first did

not, that they had introduced within their own precincts much more formidable means of destruction than any it was in the power of the French to send from gun or mortar.

The important points to be noticed in this contest are these:

1. The French took such a position that their 94 guns were opposed by the equivalent of 10 or 12 guns only.

2. In proof of the inefficiency of the Mexican guns generally, it may be stated that although the three French frigates were struck in their hulls about three hundred times, they lost but thirty-three men in killed and wounded. The *Iphigénie* was hulled 160 times, and yet had but thirteen men hurt. Very few, therefore, of these 160 balls could have passed through her sides.

3. It appears that very few, if any, of the guns exposed to the direct action of the French broadsides were dismounted or silenced by their fire.

4. The narratives of the day contain exaggerated statements of injury inflicted on the walls by shells fired from guns; the professional report, above quoted, of the chief engineer of the expedition, neither speaks of nor alludes to any such injury. After deducting from the parts of the work said to be most injured—the cavalier and also battery No. 5, in each of which a magazine exploded—there remain, as having suffered most, the quarters of the officers and bastion No. 2. As to the first, if it was elevated above the walls, as is probable, it would of course suffer severely, because the walls of mere barracks or quarters are never made of a thickness to resist shot or shells of any kind; and if not elevated above the walls, but covered by them, the injury resulted, most probably, from shells fired at high angles from the sea-mortars, and not from shells fired nearly horizontally from the Paixhan guns. Whether the injury sustained by bastion No. 2 was the effect of shot and shells upon the face of the walls, or of shells falling vertically within the bastion, is not stated. It was probably due in part to both. If there had been any extraordinary damage done by the horizontal shells, we may reasonably suppose special mention would have been made of it, because it was the first time that this missile had been tried, in a large way, in actual warfare. That anything like a breach could have been effected with solid shot, at that distance and in that time, we know to be impossible; but it is neither unreasonable to suppose, nor unlikely, that many of the heavy vertical shells may have fallen in the bastion and caused much injury. Whatever may have been the cause of the damage, or its amount, it did not, we have reason to believe, extinguish the fire of any of the five 16-pounders that were pointed from the bastion against the ships.

5. So far as effects were produced by the direct action of the French armament, whether guns, bomb-cannon, or sea-mortars, it does not appear that there was the slightest reason for the submission of the fort. There is little doubt that the 8,250 shot and shells fired at the castle must have greatly marred the surface of the walls, and it is not unlikely that three or four striking near each other may have made deep indentations, especially as the stone is soft, beyond any material applied to building in any part of the United States. But these are not injuries of material consequence, however they may appear to the inexperienced eye, and we should risk little in asserting that, abstracting the effects of the explosion, the castle was as inaccessible to assault after the cannonade as before it; that, so far as regards the levelling of obstacles lying in the way of a sword in hand attack, the 8,250 shot and shells might as well have been fired in the opposite direction.

6. The explosion, however, of two deposits of powder in the castle, one of which is reported to have buried sixty men in its ruins, showed the defenders that, although they might evade the vertical fire, and their works might cover them from the horizontal fire of the French, there was no protection against, no evasion of, the dreadful ravages of exploding magazines. With this ruin around them, and a sixfold greater ruin likely, at every moment, to burst upon their

heads, it is not surprising that a garrison, found in circumstances so un military, doubted their power of protracted resistance.

7. It must be borne in mind that these explosions have nothing to do either with the question of relative strength or with the peculiarities of the French attack. No defences, with such management, can be effective, and no attack can fail. The French, not dreaming of such culpable, such inconceivable negligence on a point always receiving the most careful attention, entered upon the cannonade with no other purpose, as is avowed, than that of somewhat weakening the defences and dispiriting and fatiguing the garrison, before proceeding to an assault, which was to have followed at night, and for which all preparations had been made. Had the Mexicans thrown all the powder of these eight magazines into the sea, or had they transported it to their barracks, and every man, making a pillow of a keg, slept through the whole cannonade, as might have been done safely, in their quarters in the curtain casemate, the castle of St. Juan de Ulloa would, we doubt not, have been as competent to resist the projected assault as it was when the French first arrived before it.

8. The number of killed and wounded in the French vessels, in proportion to the guns acting against them was, for ten guns, more than twenty-seven men, being upwards of four times as great as the loss sustained by the English at the battle of Trafalgar.

In concluding this reference to facts in military history, we will add that we do not see how it is possible to avoid making the following deduction, namely: that fixed batteries upon the shore are capable of resisting the attacks of ships, even when the armament of the latter is by far the most numerous and heavy.

There are several reasons for this capacity in batteries, of which the principal may be thus stated; and these reasons apply to vessels of every size and every sort, to small or large, to vessels moved by wind or steam. The ship is everywhere equally vulnerable, and, large as is her hull, the men and the guns are very much concentrated within her; on the other hand, in the properly constructed battery it is only the gun itself, a small part of the carriage, and now and then a head or an arm raised above the parapet that can be hurt, the ratio of the exposed surfaces being not less than fifteen or twenty to one. Next, there is always more or less motion in the water, so that the ship-gun, although it may have been pointed accurately at one moment, at the next will be thrown entirely away from the object, even when the motion in the vessel is too small to be otherwise noticed; whereas, in the battery the gun will be fired just as it is pointed, and the motion of the ship will merely vary to the extent of a few inches, or at most two or three feet, the spot in which the shot is to be received. In the ship there are, besides, many points exposed that may be called vital points; by losing her rudder, or portions of her rigging, or of her spars, she may become unmanageable and unable to use her strength; she may receive shots under water and be liable to sink; she may receive hot shot and be set on fire; and these damages are in addition to those of having her guns dismounted and her people killed by the shot which pierce her sides and scatter splinters from her timbers, while the risks of the battery are confined to those mentioned above, namely, the risk that the gun, the carriage, or the men may be struck. That the magazines should be exposed, as were those of the castle St. Juan de Ulloa, must never be anticipated as possible.

While on this part of our subject, it is proper to advert to the use of horizontal shells, or hollow shot, or Paixhan's shells, (as they are variously called,) it having been argued that the introduction of these missiles is seriously to impair the utility of fortifications as a defence of the sea-coast.

We fully believe that the free use of these shells will have an influence of some importance on the relative force of ship and battery, but that influence must be the very reverse of such predictions. How are the batteries to be affected by them? It can be but in two ways: first, the ship-gun having been

pointed so as to strike a vital point—that is to say, a gun or a carriage—the shell may explode at the instant of contact. This explosion may possibly happen thus opportunely, but it would happen against all chances, and if happening, would probably do no more than add a few men to the list of killed and wounded. For reasons that will soon appear, it is to be doubted whether the probability of dismounting the gun would be so great as if the missile were a solid 32-pounder shot. Secondly, if it be not by dismounting the guns or killing the garrison, the effects anticipated from these missiles must result from the injury they do the battery itself. Now, we are perfectly informed by military experience as to the effects of these shells upon forts and batteries, for the shells are not few, although the guns may be so—the 8-inch and the 10-inch shells having always been supplied in abundance to every siege-train, and being perfectly understood, both as to their effects and the mode of using them.

Were it a thing easily done, the blowing away of the parapets of a work, (a very desirable result to the attacking party,) would be a common incident in the attacks of fortifications; but the history of attacks by land or water affords no such instance. The only practicable way yet discovered of demolishing a fortification being by attaching a miner to the foot of the wall, or by dint of solid shot and heavy charges fired unremittingly during a long succession of hours upon the same part of the wall, in order not only to break through it, but to break through it in such a manner that the weight and pressure of the incumbent mass may throw large portions of the wall prostrate. This, the shortest and best way of breaching a wall, requires, in the first place, perfect accuracy of direction, because the same number of shots that, being distributed over the expanse of a wall, would merely peel off the face, would, if concentrated in a single deep cut, cause the wall to fall; and it requires, moreover, great power of penetration in the missile—the charge of a breaching-gun being for that reason one-third greater than the common service charges. Now, the requisite precision of firing for this effect is wholly unattainable in vessels, whether the shot be solid or hollow; and if it were attainable, hollow shot would be entirely useless for the purpose, because *every one of them would break to pieces against the wall*, even when fired with a charge much less than the common service charge. This is no newly-discovered fact; it is neither new nor doubtful. Every hollow shot thrown against the wall of fort or battery, if fired with a velocity affording any penetration, will unquestionably be broken into fragments by the shock.

After so much had been said about the effect of these shells upon the castle of St. Juan de Ulloa, it was deemed advisable, although the result of European experiments were perfectly well known, to repeat in our own service some trials touching this point. A target was therefore constructed, having one-third part of the length formed of granite, one-third of bricks, and the remaining third of freestone. This was fired at by a Paixhan gun and by a 32-pounder from the distance of half a mile, and the anticipated results were obtained, namely:

1st. Whether it was the granite, the brick, or the freestone that was struck, the solid 32-pounder shot penetrated much deeper into the wall, and did much more damage than the 8-inch hollow shot; and—

2d. These last broke against the wall in every instance that the charge of the gun was sufficient to give them any penetration.

The rupture of the shell may often cause the explosion of the powder it contains, because the shell, the burning fuse, and the powder are all crushed up together; but the shell having no penetration, no greater injury will be done to the wall by the explosion than would be caused by the bursting of a shell that had been placed against it.

From all this it appears, incontrovertibly, that, as regards the effects to be produced upon batteries by ships, solid shot are decidedly preferable to hollow shot; and the ship that, contemplating the destruction of batteries, should change any of her long 24 or 32-pounder guns for Paixhan guns would certainly

weaken her armament. Her best missiles, at ordinary distances, are solid shot; and, if she can get near, grape shot to fire into the embrasures and over the walls. The best shells against batteries are the sea-mortar shells, fired at high elevations; which, being of great weight and falling from a great height, penetrate deeply, and containing a considerable quantity of powder cause material ravage by their explosion. Such shells, however, can only be fired by vessels appropriately fitted.

The use of these same hollow shot by batteries against vessels is, however, an affair of different character. The shells do not break against timber, but penetrating the bulwarks they, in the first place, would do greater damage than hollow shot, by making a larger hole and dispersing more splinters; and having, as shot, effected all this injury, they would then augment it many fold by exploding.

In all cases of close action between ship and battery, the shells will pass through the nearer side, and if not arrested by some object on the deck, will probably lodge and explode in the further side; causing, by the explosion, a much greater loss among the crew, and greater injury to the vessel, than by their mere transit across the vessel. As before suggested, the vessel would suffer less injury were her sides made so thin as not to retain the shell, permitting it to pass through both sides, unless fired with a small velocity. It is not impossible that an extensive use of these horizontal shells may lead to a reduction in the thickness of ships' bulwarks.

In the facts quoted above, there is no illustration of the effects of hot shot, except in the case of Gibraltar. In that attack the floating batteries were made proof against cold shot, and, as was thought by the constructor, proof against hot shot also; and so, indeed, for a time, it seemed. It was conceived that the hot shot, when buried deep in the closely-jointed timbers, would scarcely communicate flame; and that it would not be difficult, by the use of the fire-engines provided, to subdue so stifled a combustion.

By making these floating batteries impenetrable to shot, it was supposed they had been rendered equal, in perfectly smooth water, to land batteries, gun for gun; and so they might then have been, nearly, had the incombustibility of the latter been imparted to them. But now resistance to fire would not suffice; these floating batteries must either repel these horizontal shells from their bulwarks, or, if that be impossible, permit them to pass through both sides. Nothing can be better calculated to exhibit the tremendous effects of these shells than a vessel so thick-sided as to stop every shell, allowing it to burst when surrounded by several feet of timber; and there can be no greater mistake than supposing that by thickening the bulwarks of vessels-of-war, or fitting up steam batteries with shot-proof sides, the effects of land batteries are to be annulled, or in any material degree modified.

We will sum up this branch of our subject with the remark that the facts of history, and the practice of all warlike nations, are in perfect accordance with the conclusions of theory. The results that reason anticipated have occurred again and again. And so long as, on the one side, batteries are formed of earth and stone; and, on the other, ships are liable to be swallowed up by the element on which they float, or to be deprived of the means by which they move; so long as they can be penetrated by solid shot, set on fire or blown up by hot shot, or torn piecemeal by shells, the same results must, inevitably, be repeated at each succeeding trial.

But, after all, it may be urged that the general principle herein contended for, namely, the superiority of batteries in a contest with ships, might be admitted; and still it would remain to show that batteries constitute the kind of defence best adapted to our peculiar wants. This is true; and we will now proceed to consider, severally, the cases to which defence must be applied.

It may be well, however, first to recall the general scope of the preceding

argument. It has been contended that floating defences should not be relied on, not because they are actually incompetent to the duty, but because they cannot fulfil this duty unless provided in inordinate numbers, and at a boundless expense; and we have endeavored to show that this remark is generally true, whether the defensive fleet be made up of sea-going vessels, of floating batteries, or of steam batteries. We have next urged the point that properly planned and constructed batteries are an overmatch for vessels-of-war, even when greatly inferior to them in armament—sustaining our opinion by many striking examples, and explaining satisfactorily the only instances that have cast any doubt on such contests. If the facts and reasonings we have presented do not convey the same strong convictions that sway our own minds, it must be because we have obscured rather than illustrated them; for it would seem to be impossible that facts could be more unexceptionable, or reasons more beyond the reach of cavil. However that may be, we now leave them to candid and dispassionate revision, and proceed to examine the mode of applying these defences to our own coast.

It may be well to divide these into several distinct classes:

1. There will be all the smaller towns upon the coast, constituting a very numerous class.

At the same time that no one of these, of itself, would provoke an enterprise of magnitude, it is still necessary to guard each and all against the lesser attacks. A small vessel might suffice to guard against single vessels that would otherwise be tempted by facility to burn the shipping and exact a contribution; but something more than this is necessary, since the amount of temptation held out by a number of these towns would be apt to induce operations on a larger scale. It might often happen, moreover, that our own vessels-of-war would be constrained to take refuge in these harbors, and they should find cover from the pursuer.

Although the harbors of which we now speak afford every variety of form and dimension, there are few, or none, wherein one or two small forts and batteries cannot be so placed as to command all the water that a ship-of-war can lie in, as well as the channel by which she must enter. While the circumstances of no two of them are so nearly alike as not to modify the defences to be applied to them severally, all should fulfil certain common conditions, namely: the passage into the harbors should be strongly commanded; the enemy should find no place, after passing, wherein he would be safe from shot and shells; and the works should be inaccessible to sudden escalade—that is to say, a small garrison should be able to repel such an assault. With works answering to these conditions, and of degrees of strength in accordance with the value of their respective trusts, this class of harbors may be regarded as secure. We cannot, however, here avoid asking what would be the mode of defence, if purely naval, of these harbors? Suppose the circumstances are deemed to require the presence of a frigate, or a steam frigate, or an equivalent in gun-boats: would not *two* hostile frigates, or two steam frigates, infallibly arrive in quest? Could there be devised a system more certain to result in the capture of our vessels, and the submission of our towns?

2. Another class will consist of great establishments, such as large cities, naval depots, &c., situated in harbors not of too great extent to admit of good defence at the entrance, and also at every successive point; so that an enemy could find no spot within in which he could safely prepare for operations ulterior to the mere forcing an entrance.

In this class are to be found objects that are, in every sense, of the highest value. On the one hand, accumulations of military and naval material, and structures for naval accommodation, that could not be replaced during a war, which are of indispensable necessity, and of great cost; and, on the other hand, the untold wealth of great cities. As these objects must be great in the eyes of

the enemy—great for him to gain, and for us to lose—corresponding efforts on his part must be looked for and guarded against. If he come at all, it will be in power; and the preparations on our part must be commensurate.

The entrance to the harbor, and all the narrow passes within it, must be occupied with heavy batteries; and if nature does not afford all the positions deemed requisite, some must, if practicable, be formed artificially. Batteries should succeed each other along the channel, so that the enemy may nowhere find shelter from effective range of shot and shells while within the harbor, even should he succeed in passing the first batteries.

Provided the shores admit this disposition, and the defences be supplied with an armament, numerous, heavy, and selected with reference to the effects on shipping, the facts we have quoted from history show that these defences may be relied on.

If the mere passing under sail, with a leading wind and tide, one, or even two sets of batteries, and then carrying on operations out of the reach of these, or any other, were all, the enemy might perhaps accomplish it; but our present supposition is, that with this class his ulterior proceedings, and finally his return, are to be subject to the incessant action of the defences.

3. This brings us to consider a third class, consisting of establishments of importance situated at a distance up some river or bay, there being intermediate space too wide to be commanded from the shores. In such cases the defence must be concentrated upon the narrow passes, and must, of course, be apportioned in armament to the value of the objects covered. When the value is not very great, a stout array of batteries at the best positions would deter an enemy from an attempt to force the passage, since his advantage, in case of success, would not be commensurate with any imminent risk. But with the more valuable establishments it might be otherwise; the consequence of success might justify all the risk to be encountered in rapidly passing in face of batteries, however powerful. This condition of things requires peculiar precautions, under any system of defence. If, after having occupied the shores, in the narrow places, in the best manner, with batteries, we are of opinion that the temptation may induce the enemy, notwithstanding, to run the gauntlet, the obstruction of the passage must be resorted to. By this is not meant the permanent obstruction of the passage; such a resort, besides the great expense, might entail the ruin of the channel. The obstruction is meant to be the temporary closing by heavy floating masses.

There is no doubt that a double line of rafts, each raft being of large size and anchored with strong chains, would make it impossible to pass without first removing some of the obstructions, and it might clearly be made impossible to effect this removal under the fire of the batteries. Such obstructions need not be resorted to until the breaking out of a war, as they could then be speedily formed, should the preparation of the enemy be of a threatening nature.

There would be nothing in these obstructions inconsistent with our use of part of the channel, since two or three of the rafts might be kept out of line, ready to move into their places at an hour's notice.

The greatest danger to which these obstructions would be exposed would be from explosion vessels; and from these they might be protected by a boom, or a line of smaller rafts in front.

From what has just been said, it will be perceived that, when the inducements are such as to bring the enemy forward in great power, and efficient batteries can be established only at certain points, we are not then to rely on them exclusively. In such a case, the enemy should be stopped by some physical impediments; and the batteries must be strong enough to prevent his removing these impediments, and also to prevail in a cannonade, should the enemy undertake to silence the works.

The conditions these obstructions have to fulfil are these:

1st. They must be of a nature to be fixed readily, and to be speedily removed when there is no longer occasion for them; and, to this end, they must be afloat.

2d. They must have adequate inertia to resist, or rather not to be destroyed or displaced by, the shock of the heaviest ship; and, in order to this, they must be held by the heaviest and strongest cables and anchors.

3d. They must be secure from the effects of explosive vessels; and, if in danger from this source, must be covered as above mentioned.

We do not say what are the exact circumstances in which all these conditions will be fulfilled, though we think the idea long ago presented by the board of engineers will, with modifications, embrace them all.

The idea is this: Suppose a line (extending across the channel) of rafts, separated from each other by a space less than the breadth of a ship-of-war, each raft being about 90 feet long, 30 feet wide, and 6 feet deep, formed of strong timbers, crossed and braced in all directions, and fastened together in the strongest manner. A long-scope chain cable is to proceed from each of the four corners, two obliquely up stream and two obliquely down stream, to very heavy anchors; and there should also be a very strong chain cable passing from one raft to another. Suppose a ship, striking one of the rafts, to break the chains leading down the stream: in doing this, she must lose much of her momentum. She has, then, "under her fore foot," the raft connected by a strong chain with the rafts to the right and left; on being tightened, this chain will throw the strain upon the down stream cable of that adjoining raft towards which the ship happens to tend. If we suppose it possible for these chains also to be parted by the power still remaining in the ship, or by impulses received from succeeding vessels, there will be other chains still to break in the same way. After the down stream chains are all parted, the rafts will "bring up" in a new position, (higher up the channel,) by the anchors that, in the first instance, were pointed up stream. Here a resistance, precisely like that first overcome, is to be encountered by vessels that have lost most of their force in breaking the successive chains, and in pushing these great masses of timber before them through the water. Should there exist a doubt as to the sufficiency of these remaining anchors and chains, or should it be deemed most prudent to leave nothing uncertain, a second similar line may be placed a short distance above the first.

The best proportions and dimensions of the rafts remain to be determined; but as there is scarcely a limit to the strength that may be given to the rafts themselves, and to the means by which they are to be held to their positions, and to each other, the success of a well arranged obstruction of this sort can hardly be doubted.

The expense would not be great in the first instance, and all the materials would be available for other purposes, when no longer needed for this.

It may be repeated here, that such expedients need not be resorted to, except to cover objects of the highest importance and value, such as would induce an enemy to risk a large expedition. For objects of less importance, batteries would afford ample protection. It will be remembered that this last power is, when once established in any position, a constant quantity; and, although it should be incompetent to effect decisive results when diffused over a large fleet, may be an overmatch for any small force upon which it should be concentrated. At the same time, therefore, that there is the less liability to heavy attacks, there will be, in the batteries, the greater capacity of resistance to others.

It must not be urged, as a reproach to fortifications, that, in the case we are considering, they are obliged to call in aid from other sources, so long as these aids are cheap, efficient, and of easy resort. By the mode we have suggested, the defence will undoubtedly be complete, every chance of success being on the side of the defence; that is to say, if any confidence is to be placed in the les-

sons of experience. How, on the other hand, will the same security be attained by naval means? Only, as before shown, by keeping within the harbor a fleet or squadron, or whatever it may be, which shall be at all times *superior* to the enemy.

In a naval defence there will be no advantage in obstructions of any sort, for there can be no lessening of the array of guns in consequence of such obstructions; because, if these obstructions are under the fire of the floating defences, the enemy will first subdue that fire, and then remove the obstructions at his leisure. If this fire prove too powerful for the enemy, the obstructions will have been unnecessary, and will serve only to shut up our own fleet, preventing the prompt pursuit of a beaten foe.

4. There is a fourth class, consisting of harbors, or rather bays or estuaries, of such expanse that batteries cannot be made to control the passage. These have been before spoken of. If the occupation of, or passage through these must be defended, it must be by other means than batteries upon the shore. The reliance must, from the nature of the case, be a floating defence, of magnitude at least equal to the force the enemy may bring. The complete defence of each of these bays would, therefore, involve very great expense; certainly, in most cases, greater than the advantages gained. The Chesapeake bay cannot, for instance, be shut against a fleet by fortifications; and if the entrance of the enemy is to be interdicted, it must be by the presence of a not inferior fleet of our own. Instead of such a system, it will be better to give up the bay to the enemy, confining our defences to the more important harbors and rivers that discharge into the bay. By this system, not only will these harbors be secure, but the defences will react upon the bay itself, and, at any rate, secure it from predatory incursions; because, while Hampton roads and the navy yard at Norfolk are well protected, no enemy would proceed up the bay with any less force than that which could be sent out from the navy yard.

In certain cases of broad waters, wherein an enemy's cruisers might desire to rendezvous in order to prosecute a blockade, or as a shelter in tempestuous weather, there may be positions from which sea-mortars can reach the whole anchorage, although nothing could be done with guns. A battery of sea-mortars, well secured from escalade, would, in such a case, afford a good defence, because no fleet will lie at anchor within the range of shells.

In thus distributing the various exposed points of the sea-coast into general classes, according to the most appropriate modes of defence, we do not find that anything can be substituted for fortifications, where fortifications are applicable, and we find them applicable in all the classes but the last; and in the last we shall find them indispensable as auxiliaries. In this last class there are, no doubt, some cases where naval means must constitute the active and operative force; and it is probable that steam batteries may, of all floating defences, be the most suitable.

It must not be forgotten, however, that the very qualities which recommend this particular kind of force will equally characterize the steam vessel of the enemy; nor must it be forgotten that, whether steam vessels or sailing vessels, or both, are relied on, unless there are well-secured points on the shore, under which they can take refuge, they will themselves constitute an object inviting the superior force of an enemy.

If, for example, we were to deem one of the open harbors of such importance as to assign eight or ten steam batteries for its protection, we should thereby place within reach of the enemy an object worthy of the efforts of a squadron, or twelve or fifteen vessels of the same description. Even, therefore, in the cases where naval means must be resorted to for defence upon the water, there should be works upon the shore behind which, if overpowered, they can retire.

It has been before remarked that the steam batteries are in no way more formidable to shore batteries than sailing vessels are: armed with Paixhan guns

they would be less so. And they would be less formidable, also, on account of their comparatively small number of guns; for there is no reason why the firing should be more accurate than from ships; and the chances of inflicting injury would be in proportion to the number of missiles.

The only material effect the introduction of this description of vessel can have upon a system of defence by fortifications is, that owing to their less draught of water, it will be necessary to secure channels that, not being navigable by vessels of the line and frigates, might otherwise be left unguarded. Some of these channels may have the draught of water lessened by an artificial ridge of stones, so as to be impracticable even to steam vessels; and this may often be done at small expense, and without detriment to the harbors; others will need additional fortifications. But the instances are not numerous where any such shallow channels exist.

In opposition to an opinion not uncommon, that modern improvements in steam vessels will tend to lessen the necessity for fortifications, we here see that the tendency is rather to increase their number.

Throughout this whole discussion the argument has turned on the relative efficiency of fixed and floating defences. The great relative economy of the former, we suppose, will be conceded. If not, we would ask, as conclusive, or at least as leading to calculation entirely satisfactory, that the following information be obtained from authentic sources, namely: the first cost, when complete in all respects, of the frigates *United States*, *Constitution*, and *Congress*, and also the entire expense of each of said vessels up to this time; specifying, as to each, the year of the several expenditures and the amounts thereof, under the heads, as far as practicable, of *first cost*, *repairs or rebuilding*, and *improvements and alterations*; and distinguishing—1st. The expense bestowed upon the hull. 2d. The expense bestowed upon the masts, spars, sails, anchors, cables and rigging. 3d. The expense bestowed upon the armament; and 4th. The expense bestowed upon all other matters, (as boats, ballast, tanks, paint, &c.), necessarily connected with the preservation, or the ordinary service of the vessel.

Before we proceed to describe the several positions on the coast requiring fortifications, we have something still to say on the general subject, though on another branch. We now refer to the kind of fortifications, or rather to their magnitude and strength. That this particular topic should be embraced by our remarks is the more necessary since views hostile to the system of works now in progress have been urged from a high source.

The present system is founded on this principle, to wit: that the fortifications should be strong in proportion to the value of the objects to be secured. The principle will not, we suppose, be controverted, but only the mode of applying it.

There will hardly be a difference of opinion as to the mode of guarding the less important points. There being no great attraction to an enemy, works simple in their features, requiring small garrisons only, containing a moderate armament, but at the same time inaccessible to the dashing enterprises that ships can so easily land, and which can be persevered in for a few hours with much vigor, will suffice. Circumstances must, however, materially modify the properties of these works, even when the points to be guarded are of equal value. In one, the disadvantage of position must be compensated by greater power; in another, natural strength may need little aid from art; in another, greater width in the guarded channel may demand a larger armament; and in a fourth, peculiar exposure to land attack may exact more than usual inaccessibility. But all these varieties lie within limits that will probably be conceded.

As to the larger objects, it has been contended that there has been exaggeration in devising works to cover these, the works having been calculated for more formidable attacks than they will be exposed to. It is easy to utter vague

criticisms of this nature, and it is not easy to rebut them without going into an examination as minute as if the criticism were ever so precise and pertinent.

But let us look a little at the material facts. What is the object of an enemy? What are his means? What should be the nature of our defences?

The object may be to lay a great city under contribution, or to destroy one of our naval depots, or to take possession of one of our great harbors, &c. It was estimated that in the great fire in the city of New York, in the year 1835, the property destroyed within a few hours was worth upwards of seventeen millions of dollars, although the fire was confined to a very small part of the city, and did not touch the shipping. Is it easy, then, to estimate the loss that would accrue from the fires that a victorious enemy could kindle upon the circuit of that great city when no friendly hand could be raised to extinguish them? or is it easy to overrate the tribute such a city would pay for exemption from that calamity? Can we value too highly the pecuniary losses that the destruction of one of the great navy yards would involve, and the loss, beyond all pecuniary value, of stores and accommodations indispensable in a state of war, and that a state of war can hardly replace?

But what are the enemy's means? They consist of his whole sea-going force, which he concentrates for the sake of inflicting the blow. In the language of the critic: "From the nature of maritime operations, such a fleet could bring its whole strength to bear upon any particular position, and, by threatening or assailing various portions of the coast, either anticipate the tardy movements of troops upon land, and effect the object before their concentration, or render it necessary to keep in service a force far superior to that of the enemy, but so divided as to be inferior to it on any one point."

We have, then, objects of sufficient magnitude, and the means of the enemy consist in the concentration of his whole force upon one of these objects.

With the highest notion of the efficiency of fortifications against shipping, these are not cases where any stint in the defensive means are admissible. Having, therefore, under a full sense of the imminent danger to which the great objects upon the coast are exposed, applied to the approaches by water an array of obstacles worthy of confidence, we must carefully explore all the avenues by land, in order to guard against approaches that might be made on that side in order to evade or to capture the works guarding the channels. But before deciding on the defences necessary to resist these land attacks, it will be proper to estimate more particularly the means that an enemy may be expected to bring forward with a view to such land operations.

History furnishes many examples; and the expedition to Flushing, commonly called the Walcheren expedition, may be cited as peculiarly instructive.

From an early day Napoleon had applied himself to the creation of a maritime force in the Scheldt, and, in 1809, he had provided extensive dock yards and naval arsenals at Flushing and at Antwerp. On his invasion of Austria this year, he had drawn off the mass of his troops that had before kept jealous watch over these naval preparations, relying now on forts and batteries, and on the fortifications of Flushing and Antwerp, for the protection of the naval establishments, and of a fleet containing several line-of-battle ships and frigates, and a numerous flotilla of smaller vessels.

The great naval establishment at Flushing, near the mouth of the Scheldt, and of Antwerp, some sixty or seventy miles up the river, with the vessels afloat on the river or in progress in the yards, presented an object to England worthy of one of her great efforts.

The troops embarked on this expedition consisted of upwards of 33,000 infantry, 3,000 cavalry, more than 3,000 artillery, and some hundreds of sappers and miners—constituting an army of about 40,000 men. The naval portion consisted of 35 sail of the line, 23 frigates, 33 sloops-of-war, 28 gun, mortar, and bomb vessels, 36 smaller vessels, and 82 gunboats; making a total of 155 ships and other armed vessels and 82 gunboats. The guns, mortars, &c., pro-

vided for such bombardments and sieges as the troops might have to conduct amounted to 158 pieces, with the suitable supplies of ammunition and stores of every kind.

The idea of sailing right up to their object, in spite of the forts and batteries, seems not to have found favor, notwithstanding the power of the fleet. The plan of operations, therefore, contemplated the landing a portion of the army on the island of Walcheren, to carry on the siege of Flushing, while another portion proceeded up the Scheldt as high as Fort Bartz, which was to be taken, after which the army would push on by land about twenty miles further, and lay siege to Antwerp; all which, it was thought, might be accomplished in eighteen or twenty days from the first landing.

The execution did not accord with the design. Flushing, it is true, was reduced within fifteen days, and in less than a week from the debarkation (which was on the 31st of July) Fort Bartz was in possession of the English, having been abandoned by the garrison. But it was twenty-five days before the main body, with all necessary supplies for a siege, were assembled at this point and ready to take up the line of march against Antwerp. Since the first descent of the British matters had, however, greatly changed. The French were now in force; they had put their remaining defences in good condition; they had spread inundations over the face of the country; and not only would there be little chance of further success, but the safety of the expedition, formidable as it was, might have been compromised by a further advance. It was therefore decided in council to abandon the movement against Antwerp. The troops accordingly returned to the island of Walcheren, which they did not finally leave till the end of December.

The failure in the ultimate object of the expedition is to be ascribed to the omission to seize, in the first instance, the south shore of the river, and capture the batteries there, as was originally designed, and which was prevented by the difficulty of landing enough troops at any one debarkation, in the bad weather then prevailing. The capture of these batteries would have enabled the expedition to have reached Fort Bartz during the first week; and, in the then unprepared state of the French, the issue of a dash upon Antwerp can hardly be doubted.

The dreadful mortality that assailed the British army is wholly unconnected with the plans, conduct, or issue of the enterprise, as a military movement; unless, indeed, it may have frustrated a scheme for occupying the island of Walcheren as a position during the war.

Possession was held of the island for five months; and it was finally abandoned from no pressure upon it by the French, although, after the first six weeks, the British force consisted, in the aggregate, of less than 17,000 men; of which, for the greater part of the time, more than half were sick—effectives being often reduced below 5,000 men.

We see, therefore, that an effective force of less than 10,000 men maintained possession of the island, in the face of, and in close proximity to, the most formidable military power in Europe, for more than three months; and no reason can be perceived why it might not have remained an indefinite period, while possessed of naval superiority.

The proximity of England undoubtedly lessened the expense of the expedition, but it influenced the result in no other way material to the argument.

We will allude to no other instances of large expeditions sent by the English to distant countries, than the two expeditions, each of about 10,000 men, sent in the year 1814 against this country: one by the way of Canada, the other to the Gulf of Mexico. United in a single force of 20,000 men against our sea-coast, the expense would have been less, and the results more certain.

The French, notwithstanding their constant naval inferiority, have found opportunities to embark in great undertakings of the same nature. In 1802,

Leclerc proceeded to St. Domingo with 34 line-of-battle ships and large frigates, more than 20 small frigates and sloops, and upwards of 20,000 men.

We learn from these points in history what constitutes an object worthy of vast preparations; and it is impossible to resist the fact, that our own coast, and rivers, and bays, possess many establishments not less inviting to an enemy than Flushing and Antwerp.

We are taught, moreover, what constitutes a great expedition; in other words, what is the amount of force we must prepare to meet; and, more than all, we are taught that such an expedition, seizing a favorable moment, when the military arrangements of a country are incomplete—when the armies are absent, or imperfect in their organization or discipline—does not hesitate to land in the face of the most populous districts, and, availing of the local peculiarities, and covered and supplied by a fleet, to undertake operations which penetrate deep into the country, and consume considerable time.

It seems, therefore, that whenever the object we are to cover possesses a value likely to provoke the cupidity of an enemy, or to stimulate his desire to inflict a serious blow, it is not enough that the approaches by water are guarded against his ships; it will be indispensable to place safeguards against attacks by land also. A force considerable enough for very vigorous attacks against the land side of the fortifications may be thrown upon the shore; and if these yield, a way is opened for the ships, and the enemy carries his object.

In certain positions, the local circumstances would favor the land operations of an enemy; permitting him, while operating against the fortifications, to be aided by the fleet, and covered from the reaction of the general force of the country. In other positions, the extreme thinness of the population in the neighborhood would require the forts to rely, for a considerable time, on their own strength. In all such cases a much greater power of resistance would be requisite than in circumstances of an opposite nature. In all such circumstances the works should be of a strength adequate to resist an attack, although persevered in vigorously for several days. But when these land operations lead away from the shipping, or when the surrounding population is considerable, or the enemy is unable to shelter his movements by local peculiarities, then it will suffice if the works be competent to resist attacks, vigorous also, of a few hours only.

The magnitude and strength of the works will depend, therefore, on the joint influence of the value of the object covered, the natural strength of the position, and the succor to be drawn from the neighborhood. We may introduce, as instances, New York and Pensacola. The former is as attackable as the latter: that is to say, it equally requires artificial defences; and, owing to its capacious harbor and easy entrance, it is not easy to place it in a satisfactory condition as to the approaches by water. But while an enemy, in approaching any of the principal works by land, could not well cover himself from the attacks of the concentrated population of the vicinity, the rapid means of communication from the interior would daily bring great accessions to the defence. A land attack against the city must, consequently, be restricted to a few days; and the works will fulfil their object, if impregnable to a *coup de main*.

Pensacola, an object, in many respects, of the highest importance, and growing in consequence every day, is capable of being defended as perfectly as the city just mentioned. The principal defences lie on a long sandy island, which closes in the harbor from the sea. An enemy landed on this island (Santa Rosa) would be in uninterrupted communication with his fleet; could, owing to the sparseness of the population, have nothing to apprehend, for some time, from any re-enforcements arriving at the place; and would be well protected, by position, from the effects of this succor, when it should arrive. While in possession of naval superiority, he might, therefore, not unreasonably calculate on being able to press a siege of many days of the work which occupies the extremity of the island, and

guards the entrance to the harbor. And even before coming into possession of this work his gun and mortar batteries, on the same island, would destroy every thing not bomb-proof and incombustible at the navy yard. An attack not less persevering, and with equal chances of success, might be made from the other side of the harbor also.

If, therefore, the power to resist a *coup de main* be all that is conferred on the works at Pensacola, their object will be obtained only through the forbearance of the enemy; it being obviously indispensable that the principal of these works be competent to resist a short siege. If this liability resulted from the thinness of the neighboring population, it would still be many years before this state of things would be materially altered. But it does not depend on this alone; the peculiar topographical features will continue this liability in spite of increasing numbers, and ever so easy and rapid communication with the interior; it having been proved that a fleet may lie broad off this shore and hold daily communication therewith during the most tempestuous season. The English fleet of men-of-war and transports lay, during the last war, from the 7th of February to the 15th March, 1814, anchored abreast of Dauphin island and Mobile Point, where the exposure is the same as that off Pensacola.

Between the cases cited, which may be regarded as of the class of extreme cases, (a class comprising, however, many important positions,) almost every conceivable modification of the defence will be called for, to suit the various conditions of the several points.

The fortifications of the coast must therefore be competent to the double task of interdicting the passage of ships and resisting land attacks—two distinct and independent qualities. The first demands merely an array in suitable numbers and in proper proportions of heavy guns, covered by parapets proof against shot and shells; the second demands inaccessibility. As there is nothing in the first quality necessarily involving the last, it has often happened, either from the little value of the position, or from the supposed improbability of a land attack, or from the want of time to construct proper works, that this property of inaccessibility has been neglected.

Whenever we have an object of sufficient value to be covered by a battery, we should bear in mind that the enemy will know the value of the object as well as ourselves. That it is a very easy thing for him to land a party of men for an expedition of an hour or two; and, unless we take the necessary preventive measures, his party will be sure to take the battery first; after which, nothing will prevent his vessels consummating the design it was the purpose of the battery to prevent.

In general, the same fortifications that guard the water approaches will protect the avenues by land also, but in certain cases a force may be so landed as to evade the channel defences, reaching the object by a route entirely inland. Of course this danger must be guarded against by suitable works.

After the preceding exposition of our views on the general subject of the defences of the coast, it may not be out of place here to indicate the mode by which the system of fortifications on which we would rely can be manned and served without an augmentation for that particular purpose of the regular army.

The force that should be employed for this service in time of war is the militia, (using the term in a comprehensive sense;) the probability being that, in most of the defended points on the seaboard, the uniformed and volunteer companies will supply the garrisons needed. And it may be shown that it is a service to which militia are better adapted than any other.

The prominent defect of a militia force results from the impossibility of so training the men to field movements in the brief period of their service as to give them any confidence in themselves as manœuvrers in the face of regular troops; the little they learn merely suffices to show them that it is but little;

every attempt of the kind proving, by the disorder that they know not how to avoid, how much greater would be the disorder if in face of an enemy and under fire.

Without the knowledge to be obtained only by long and laborious practice, the militiaman knows that he is no match in the field for the regular soldier, and it is not surprising that he should desire to avoid an encounter. But there is no such difficulty in the service of fixed batteries. The militiaman has to be taught merely the service of a single gun, than which nothing can be more simple. He must learn to use the rammer and the sponge, the handspike and the linstock, to load, and to run to battery, to trail and to fire; these are all. Each of these operations is of the utmost simplicity, depending on individual action and not on concert, and they may all be taught in a very short time. There is no manœuvring, no marching, no wheeling. The squad of one gun may be marched to another, but the service of both is the same. Even the art of pointing cannon is, to an American militiaman, an art of easy attainment, from the skill that all our countrymen acquire in the use of fire-arms—"drawing sight, or aiming," being the same art, modified only by the difference in the gun.

The mode of applying this force may be illustrated by the case of any of our cities on the seaboard. The forts and batteries, being put in perfect condition, should be garrisoned (at least the more important ones) by a small body of regular artillery, such as our present military force could supply, and sufficient for the preservation of the public property, and to afford indispensable daily guards; to these should be added two or three men of the ordnance department, especially charged with the condition of the armament and ammunition, and two or three engineer soldiers, whose sole duty it would be to attend to the condition of the fortifications; keeping every part in a state of perfect repair. In certain important works, however, that would be exposed to siege, or to analogous operations, it would be prudent, especially in the beginning of a war, to keep up a more considerable body of regular troops.

The volunteer force of the city should then be divided into detachments, without disturbing their company organization, and should be assigned to the several works, according to the war garrisons required at each; from four to six men, according to circumstances, being allowed to each gun.

The larger works might require ten, fifteen, or even twenty companies; the smaller, one, two, three, or more companies; and, in some cases, even a platoon might suffice. Being thus assigned, each portion of the city force would have its definite alarm-post, and should be often taken to it, and there exercised in all the duties of its garrison, and more especially in the service of its batteries and in its defence against assault. The multiplicity of steamboats in all the cities would enable the volunteers to reach even the most distant alarm-posts in a short time.

In order that all these troops may become expert in their duty, one of the works most convenient to the city, besides being the alarm-post of some particular portion of the volunteers, should, during peace, be the ordinary school of drill for all; and in this the detachments should, in turn, assemble and exercise.

Besides the mere manual of the gun and battery, there should be frequent target practice, as being not only necessary to the proper use of the battery, but as imparting interest and excitement to the service.

It might be necessary for a time to submit the volunteers to the drill of a competent officer or non-commissioned officer of the regular artillery; and, in particular, to conduct the practice with shot and shells under such instruction.

The portion of the military force of the city not stationed in the fixed batteries would constitute, under an impending attack, a reserve, posted either in one or several bodies, according to circumstances, ready to cover exposed points, to co-operate in offensive movements, or to relieve exhausted garrisons: this

portion having connected with it the mounted force, the field artillery, and the heavy movable guns.

This appropriation of the volunteer force to the immediate defence of the city would operate in the most favorable way upon that force, superadding to the impulses of patriotism every feeling connected with family, property, and social and civil relations, and, while making military service the first of duties, relieving it of hardship and privation. It would be a peculiar feature in this kind of service that the governing motive in the choice of officers would be favorable to the condition of the troops, every man feeling that the safety of his dearest concerns depended on the efficiency and courage of his officers. The same motive would prompt him, moreover, to desire, and contribute to, the highest state of efficiency in the corps.

The organization of volunteer force here contemplated may comprehend the whole maritime frontier; and be applicable, also, at the more populous points upon the inland borders.

This arrangement, while it might be an enduring one, would be the least expensive by far of any that would be efficient.

The days of exercise, drill, and encampment should be fixed and invariable, in order that they may the less interfere with the private occupations of the volunteers. During an impending attack, greater or less portions should be constantly at these posts; but still the service would comprise but a very small portion of the year.

According to the value of the interest to be defended, and the extent of the works to be occupied, would be the rank of the chief command; which should be intrusted to an officer of the regular army, whose control might often be extended, advantageously, over a certain extent of seaboard to the right and left, constituting a maritime department.

In the tables to be presented at the end of this report, we shall give the whole number of men required for the complete defence of each of the works.

We now proceed to examine the coast in detail; and, in order to conform to the Senate's resolution, we shall divide the whole sea-coast of the United States into two great portions: the first portion extending from *Passamaquoddy bay to Cape Florida*; the second from *Cape Florida to the mouth of the Sabine*. In our description we shall, without any other than this general acknowledgment, quote largely from a report presented to Congress in April, 1836, and to be found in the Senate documents of the 1st session 24th Congress, No. 293, vol. 4. This report contains an argument on the general subject, embodying many important considerations, which we have thought best not to repeat in this lengthened report, but to refer to as worthy of perusal.

We will conduct the examination geographically, beginning at the northeastern extremity, and referring in every case to accompanying tables which exhibit the several works in the order of relative importance as to time.

COAST FROM PASSAMAQUODDY BAY TO CAPE FLORIDA.

The extreme northeastern section of this coast, extending from Quoddy Head to Cape Cod, is characterized by its serrated outline and its numerous harbors, and, at certain seasons, by its foggy atmosphere. The extent of this section, measuring from point to point wherever the breaks of the coast are abrupt, is about 500 miles; while a straight line from one of the above-mentioned capes to the other is hardly half that distance. The eastern half is singularly indented by deep bays; the coast being universally rocky and possessing numerous islands surrounded by deep water, which islands not only increase the number of harbors, but cover, besides, an interior navigation well understood by the hardy coasters and measurably secured by its intricacies; and the other dangers of this boisterous and foggy region, from interruption by an enemy. The western

half is much less broken; it is covered by few islands in comparison, but contains several excellent harbors.

The eastern harbors of Maine are exposed in a peculiar manner. They are not only on the flank of our line, but they are also quite near the public establishments of the greatest maritime power. They are, moreover, as yet backed by only a thin population; and are, consequently, weak as well as exposed. The time may not, however, be very distant when, becoming wealthy and populous, they will be objects of a full portion of the national solicitude. Works designed for these harbors must therefore be calculated for the future; must be founded on the principle that they must defend places much more important than any now existing there; that, being near the possessions of a foreign power, they will be in a particular manner liable to sudden and repeated attacks; and that, lying at the extremity of the coast, they are liable to be tardily succored. The works must consequently be competent to resist escalade, and to hold out for a few days. Feebler works might be more injurious than beneficial: their weakness would in the first place invite attack; and it being often a great advantage to occupy fortified places in an adversary's territory, the enemy could prepare himself to remedy the deficiencies of the forts after they should fall into his hands, by adding temporary works, by providing strong garrisons, and by aiding the defence with his vessels.

No surveys have been made of these harbors, and no plans formed for their defence. It may be well to observe here, once for all, that much confidence is not asked for the mere conjectures presented below, as to the number and cost of the works assigned for the protection of the harbors which have not yet been surveyed: in some cases there may be mistakes as to the number of forts and batteries needed; in others, errors will exist in the estimated cost.

Eastport and *Machias* may be mentioned as places that will unquestionably be thought to need defensive works by the time, in the order of relative importance, the execution of them can be undertaken by the government. There are several small towns eastward of Mount Desert island that may, at that period, deserve equal attention; at present, however, the places mentioned will be the only ones estimated for; and \$100,000 will be assumed as the cost at each.—(Statement 1, table F.)

Mount Desert island, situated a little east of Penobscot bay, having a capacious and close harbor, affording anchorage for the highest class of vessels, and easily accessible from sea, offers a station for the navy of an enemy superior to any other on this part of the coast. From this point his cruisers might act with great effect against the navigation of the eastern coast, especially that of Maine: and his enterprises could be conducted with great rapidity against any points he might select. These considerations, added to the very great advantage in certain political events, of our occupying a naval station thus advanced, whence we might act offensively, together with the expediency of providing places of succor on a part of the coast where vessels are so frequently perplexed in their navigation by the prevailing fogs, lead to the conclusion that the fortification, in a strong manner, of this roadstead may before long be necessary. A survey of this island was begun many years ago; but the party being called off to other duties it was never completed. The project of defensive works has not been made. The entire cost may be, as assumed by the engineer department some years ago, \$500,000.—(Statement 1, table F.)

Castine.—It would seem to be impossible, on this coast, to deprive an enemy enjoying naval superiority of harbors, or prevent his using them as stations during a war—insular situations, which his vessels would render unapproachable, being so numerous; but it seems proper that such of these positions as are the sites of towns should be secured. During the last war the English held the position of Castine for some time, and left it at their pleasure. It is probable a

work costing about \$50,000 would deter an enemy from again making choice of this position.—(Statement 1, table F.)

Penobscot bay.—Upon this bay, and upon the river of the same name flowing into it, are several flourishing towns and villages. Of the many bays which intersect the coast the Penobscot is the one which presents the greatest number of safe and capacious anchorages. As before observed a large portion of these harbors must, for the present, be left without defences, but the valuable commerce of the bay and river must be covered; and to afford a secure retreat for such vessels as may be unable to place themselves under the protection of the works to the east or west of the bay, the passage of the river must be defended. The lowest point at which this can be done without great expense is opposite Bucksport, at the "narrows." A project has been given in for a fort at that position estimated at \$150,000.—(Statement 1, table D.)

St. George's bay, Broad bay, Damariscotta, and Sheepscut.—West of the Penobscot occur the above-mentioned bays, all being deep indentations leading to towns, villages, and various establishments of industry and enterprise. The bays have not been surveyed, and of course no plans have been formed for their defence. \$400,000 are assigned to the defence of these waters. The Sheepscut is an excellent harbor of refuge for vessels of every size.—(Statement 1, table F.)

Kennebeck river.—This river (one of the largest in the eastern States) enters the sea nearly midway between Cape Cod and the mouth of the St. Croix. It rises near the source of the Chaudière, which is a tributary of the St. Lawrence, and has once served as a line of operations against Quebec. The situation and extent of this river, the value of its products, and the active commerce of several very flourishing towns upon its banks, together with the excellence of the harbor within its mouth, will not permit its defence to be neglected. The surveys begun many years ago were never finished. The estimated cost of defences, as formerly reported by the engineer department, was \$300,000. Positions near the mouth will permit a secure defence.—(Statement 1, table D.)

Portland harbor.—The protection of the town, of the merchantmen belonging to it, and of the ships-of-war that may be stationed in this harbor to watch over this part of the coast, or that may enter for shelter, (all of them important objects,) may be secured, as an inspection of the map of the harbor will show, by occupying Fort Preble Point, House island, Hog Island ledge, and Fish Point.

If the two channels to the west and east of Hog island can be obstructed at small expense (to decide which some surveys are yet necessary) there will be no necessity for a battery on the ledge, and Fish Point need be occupied only by such works as may be thrown up in time of war. The expense, as now estimated, of the works planned for this defence, will be \$155,000 for Fort Preble, and \$48,000 for House island; for Hog Island channel say, \$135,000.—(Statement 1, tables A, D, E, and F.) In addition there must be repairs immediately applied to the old works at an expense of \$6,600.

Saco, Kennebunk, and York.—Small works comparatively will cover these places; \$75,000 is assumed as the aggregate cost.—(Statement 1, table F.)

Portsmouth harbor and navy yard.—The only good roadstead or harbor between Cape Elizabeth and Cape Ann is Portsmouth harbor, within the mouth of Piscataqua river. Line-of-battle ships can ascend as high as Fox Point, seven miles above the town. This situation, sufficiently commodious for a secondary naval depot designed to repair vessels of war, should be maintained; but it is to be regretted that the bay to the south of Fox Point was not chosen as the site of the navy yard instead of Fernald's island. Being where it is, it will be necessary, in time of war, to make some particular dispositions for the protection of the navy yard from an attack from the north shore of the river.

The position of Fort Constitution will certainly, and that of Fort McCleary

will probably, be occupied by the defences, though the works themselves should give place to those that will better fulfil the object. The other positions for forts or batteries are Gerrishe's Point, Fishing island, and Clark's island, some, if not all, of which must be occupied. Surveys are required before the projects can be formed, or before estimates can be made; but there is reason for believing that the entire cost of fortifying this harbor will not fall short of \$300,000.—(Statement 1, table D.)

Newburyport harbor.—The points forming the mouth of the harbor are continually changing, and it seems necessary, therefore, to rely, for the defence of the harbor, on works to be thrown up during a war. There is only a shoal draught of water. It is thought \$100,000 will defend this harbor adequately.—(Statement 1, table F.)

Gloucester harbor.—The position of this harbor, near the extremity of Cape Ann, places it in close relation with the navigation of all Massachusetts bay, and imparts to it considerable importance. No surveys have yet been made, but it is believed that sufficient defence may be provided for \$200,000.—(Statement 1, table E.) Should there be any occasion for defensive works before the proposed new works can be commenced, an expenditure of \$10,000 in repairs of the old fort will be required.—(Table A.)

Beverly harbor.—This harbor will be defended chiefly by a portion of the works designed for Salem. \$50,000 in addition will secure it.—(Statement 1, table F.)

Salem harbor.—The port of Salem is distant from Marblehead two miles, and separated therefrom by a peninsula. The occupation of the extremity of Winter island (where are the ruins of Fort Pickering) on one side, and Naugus Head on the other, will effectually secure this harbor. Projects have been presented for this defence, estimated to cost \$225,000.—(Statement 1, tables D and F.) On a sudden emergency, old Fort Lee may be put in an effective state for \$2,000.—(Table A.)

Marblehead harbor.—Besides covering, in some measure, the harbor of Boston, Salem and Marblehead harbors possess an important commerce of their own, and also afford shelter for vessels prevented, by certain winds, from entering Boston, or pursuing their course eastward. The proposed mode of defending Marblehead harbor consists in occupying, on the north side, the hillock which commands the present Fort Sewall, (which will be superseded by the new work,) and, on the south, the position of Jack's Point. The two works will cost \$318,000.—(Statements 1, tables D and F.)

To repair old Fort Sewall, which may be necessary, if the new works are not soon begun, will require \$10,000.—(Table A.)

Boston harbor.—We come now to the most important harbor in the eastern section of the coast; and, considering the relation to general commerce, and the interests of the navy, one of the most important in the whole Union.

After a careful examination of all the necessary conditions of such a problem, the board of naval officers and engineers, in their joint report of 1820, gave this harbor a preference over all other positions to the east, and inclusive, of New York bay and the Hudson, as the seat of the great northern naval depot; and the government, by the great additions and improvements that have from year to year been since made to the navy yard on the Charlestown side, have virtually sanctioned the recommendation of the board. But, independent of the navy yard, Boston is a city of great wealth, and possesses an extensive and active commerce.

The old works defended merely the interior basin from attacks by water; but, as it often happens that vessels enter Nantasket roads with a wind too scant to take them to the city, or are detained in President roads by light winds or an adverse tide; as the former, especially, is a very convenient anchorage whence to proceed to sea; and, above all, as Nantasket roads affords the best possible

station for a blockading squadron, it was deemed indispensable to place permanent defences at the mouth of the harbor. The project of defence regards the existing works, with the necessary repairs and modifications, as constituting a second barrier.

Besides a permanent work, now well advanced, on George's island, it contemplates permanent works on Nantasket Head ; filling up the Broad Sound channel, so as to leave no passage in that direction for ships-of-war.

Until the best draught for steam vessels of war shall be well ascertained, it will not be safe to say to what depth the Broad Sound channel should be restricted ; nor, indeed, can it be positively asserted that this description of vessel can be conveniently excluded by such means. Other vessels *can*, however, be thus excluded ; and steam vessels passing this channel would still have to pass the inner barrier. The estimated cost of the works for this harbor is \$2,040,000.

Besides the works of a permanent character, it will be necessary, in the beginning of a war, to erect several temporary works on certain positions in the harbor, and on the lateral approaches to the navy yard.—(Statement 1, tables A, E, and F.)

Plymouth and Provincetown harbors.—These harbors have a commerce of some consequence of their own, but they are particularly interesting in reference to the port of Boston. While these are undefended, an enemy's squadron blockading Massachusetts bay will have ports of refuge under his lee, which would enable him to maintain his blockade, even throughout the most stormy seasons—knowing that the winds which would force him to seek shelter would be adverse to outward-bound, and fatal to such inward vessels as should venture near the Cape. Were the enemy deprived of these harbors, he would be unable to enforce a rigorous investment, as he would be constrained to take an offing on every approach of foul weather. Our own vessels coming in from sea, and finding an enemy interposed between them and Boston, or, being turned from their course by adverse winds, would, in case of the defence of these ports, find to the south of Boston shelters equivalent to those provided in the east, at Marblehead, Salem, Gloucester, and Portsmouth. Plymouth harbor has not been fully surveyed. Provincetown harbor has been surveyed, but the projects of defence have not been formed. The former, it is thought, may be suitably covered by a work of no great cost on Garnett Point ; while, to fortify Provincetown harbor in such a way as to cover vessels taking shelter therein, and at the same time deprive an enemy of safe anchorages, will involve considerable expense. Probably no nearer estimate can be formed at present, than that offered by the engineer department some years ago, which gave \$100,000 for Plymouth, and \$600,000 for Provincetown.—(Statement 1, tables D and E.)

The coast between Cape Cod and Cape Hatteras differs from the northeastern section in possessing fewer harbors, in having but little rocky and a great portion of sandy shore, in its milder climate and clearer atmosphere ; and it differs from all the other portions in the depth and magnitude of its interior seas and sounds, and in the distance to which deep tide navigation extends up its numerous large rivers. The circuit of the coast, not including the shores of the great bays, measures 650 miles, while a straight line from one of the above-named capes to the other measures about 520 miles.

Martha's Vineyard sound.—To the south of Cape Cod lie the islands of Nantucket and Martha's Vineyard, which, with several smaller islands on the south, and the projection of Cape Malabar on the east, enclose the above-named sound. The channels through this sound, being sufficient for merchant vessels, and one of the channels permitting the passage even of small frigates, are not only the constant track of coasting vessels, but also of large numbers of vessels arriving in the tempestuous months from foreign voyages. There are within the sound the harbors of *Turpaulin Cove*, *Holmes's Hole*, *Edgartown*, *Falmouth*, *Hyanis*, and *Nantucket*, besides small anchorages.

In addition to the many thousand vessels passing this water annually, (of which there are sometimes forty or fifty,) a portion, containing very valuable cargoes, to be seen in the harbors awaiting a change of wind, there is supposed to be at least 40,000 tons of whaling vessels owned in the towns of this sound.

If the harbors just named are to be defended at all, it must be by fortifications. There is little or no population except in the towns, and even this is believed to be entirely without military organization. A privateer might run into either of these harbors, and capture, destroy, or levy contributions at pleasure. The use of the sound itself, as an anchorage for vessels of war, cannot be prevented by fortifications alone. \$250,000 may, perhaps, suffice for the defence of all the harbors against the kind of enterprise to which they are exposed.—(Statement 1, table F.)

New Bedford and Fairhaven harbor.—No survey has been made of this harbor, on which lie two of the most flourishing towns. It is easily defensible, and the amount formerly assumed by the engineer department will probably suffice, namely, \$300,000.—(Statement 1, table D.)

Buzzard's bay.—Interposed between the main and the island of Martha's Vineyard, are the Elizabeth islands, which bound Buzzard's bay on the south. This bay covers the harbor of New Bedford, and might be used as an anchorage by an enemy's fleet; but it is too wide to be defended by fortifications.

Narraganset bay.—The properties of this great roadstead will be here briefly adverted to. More minute information may be obtained by reference to reports of 1820 and 1821.

As a harbor, this is acknowledged by all to be the best on the whole coast of the United States; and it is the only close man-of-war harbor that is accessible with a northwest wind, the prevailing and most violent wind of the inclement season. Numerous boards and commissions, sometimes composed of naval officers, sometimes of army officers, sometimes of officers of both services, have, at different times, had the subject of this roadstead under consideration; and all have concurred in recommending, in strong terms, that it be made a place of naval rendezvous and repair, if not a great naval depot; one or more of these commissions preferring it, for the latter purpose, to all other positions. These recommendations have not been acted on; but it is next to certain that a war would force their adoption upon the government.

With the opening of this anchorage properly defended, hardly a vessel-of-war would come, either singly or in small squadrons, upon the coast, in the boisterous season, without aiming at this port, on account of the comparative certainty of an immediate entrance. And this would be particularly the case with vessels injured by heavy weather, or in conflict with an enemy; with vessels bringing in prizes, or pursued by a superior force.

This use of the port would almost necessarily bring with it the demand for the means of repairing and refitting; and the concentration of these upon some suitable spot would be the beginning of a permanent dock yard.

For the same reason that ships-of-war would collect here, it would be a favorite point of rendezvous for privateers and their prizes, and a common place of refuge for merchantmen.

From this, as a naval station, the navigation of Long Island sound, and the communication between this and Martha's Vineyard sound, or Buzzard's bay, might be well protected; New London harbor would be covered; the navy yard would command southwardly, as from Hampton roads northwardly, the great inward curve of the coast between Cape Cod and Cape Hatteras; the influence of which command over the blockading operations of an enemy will be apparent, when it is considered that the only harbors of refuge left to him will be the Delaware, Gardiner's, and Buzzard's bays, and Martha's Vineyard sound.

The bays first mentioned belong to the class, before alluded to, which, being too wide for complete defence by batteries, must call

as the navy may supply; and, in reference to their defence by these means, nothing can be more important than the fortification of Narraganset roads, because all but the first of the bays just named (including an anchorage for ships-of-war under Block island) would be commanded by a single squadron of those floating defences lying in these roads. To a squadron of steam batteries, for instance, lying under the fortifications, it would be a matter of little consequence into which of the above anchorages an enemy should go—all being within reach in three or four hours, and some within sight. We will here observe, by the way, that this use of floating defences is in accordance with the principle before insisted on; they are not expected to close the entrance into these several bays, that would require a squadron for each at least equal to the enemy's; but as the enemy goes in merely for rest or shelter, and there is no object that he can injure, he may be permitted to enter, and our squadron will assail him only when the circumstances of wind, weather, &c., give all the advantages to the attack. The fortification of Narraganset roads is therefore, in effect, a most important contribution toward the defence of all the neighboring anchorages.

But the same properties that make Narraganset roads so precious to us, would recommend them to the enemy also; and their natural advantages will be enhanced in his eyes by the value of all the objects these advantages may have accumulated therein.

If this roadstead were without defence an enemy could occupy it without opposition, and, by the aid of naval superiority, form a lodgment on the island of Rhode Island for the war. Occupying this island with his troops, and with his fleets the channels on either side, he might defy all the forces of the eastern States; and while, from this position, his troops would keep in alarm and motion the population of the east, feigned expeditions against New York, or against more southern cities, would equally alarm the country in that direction; and thus, though he might do no more than menace, it is difficult to estimate the embarrassment and expense into which he would drive the government.

It has been alleged that similar consequences would flow from the occupation of other positions, (such, for instance, as are afforded in the bays just mentioned,) and that, therefore, the defence in a strong manner of Narraganset roads is useless.

Even allowing that there are other advantageous and inaccessible positions whereon an enemy might place himself, is it a reason because the foe can in spite of us, possess himself of comparatively unsafe and open harbors, that we should not apply to our own uses, but yield up to him the very best harbor on the coast; that we should submit to capture and destruction the valuable objects that accumulate in consequence of the properties of the harbor?

But it is believed that none of the outer and wider harbors will answer for such an establishment as we have supposed, nor for any other purpose than an occasional anchorage of ships-of-war; and for these reasons, amongst others: that although ships-of-war might possibly ride in these broad waters at all seasons, it would seem to be a measure of great temerity for transports to attempt it, except in the mildest seasons; and there can be little doubt that a hostile expedition would resort to no harbor as a place of rendezvous, unless it afforded sure protection to its transports; these being the only means by which ulterior purposes could be executed, or final retreat from the country effected.

If, moreover, Narraganset roads be fortified and become a naval station, or at least the station of a floating force designed to act against these outer waters, such an establishment by any enemy would at once be put upon the defensive, and require the constant presence of a superior fleet; thus measurably losing the object of the establishment.

Independent of the qualities of the harbor, however, none of these bays would answer our purpose: 1st. Because they cannot be securely defended; and, 2d.

Because they are difficult of access from the main—the communication with them being liable to interruption by bad weather, and liable to be cut off by the enemy.

The defence adopted for Narraganset roads must be formidable on the important points, because they will be exposed to powerful expeditions. Although the possession of this harbor, the destruction of the naval establishment, the capture of the floating defences, and the possession of the island as a place of debarkation and refreshment, should not be considered as constituting, of themselves, objects worthy a great expedition, they might very well be the preliminary steps of such expedition; and defences weak in their character might tempt, rather than deter it; for, although unable to resist his enterprise, they might be fully competent, after being captured and strengthened by such means as he would have at hand, to protect him from offensive demonstrations on our part.

There are, besides, in the local circumstances, some reasons why the works should be strong. The channel on the eastern side of the island, being permanently closed by a solid bridge, requires no defensive works; but this bridge being at the upper end of the island, the channel is open to an enemy all along the eastern shore of the island. Works erected for the defence of the channel on the west side of the island cannot, therefore, prevent, nor even oppose, a landing on the eastern side. The enemy, consequently, may take possession, and bend his whole force to the reduction of the forts on the island, which cannot be relieved until a force has been organized, brought from a distance, conveyed by water to the points attacked, and landed in the face of his batteries; all this obviously requiring several days, during which the forts should be capable of holding out. To do this against an expedition of 10,000 or 20,000 men, demands something more than the strength to resist a single assault.

Unless the main works be competent to withstand a siege of a few days, they will not therefore fulfil their trust, and will be worse than useless.

It must here be noticed that, although the works do not prevent the landing of an enemy on Rhode Island, they will, if capable of resisting his efforts for a few days, make his residence on the island for any length of time impossible: since forces in any number may be brought from the main and landed under the cover of the fire of the works.

To come now to the particular defences proposed for this roadstead. It must be stated that there are three entrances into Narraganset roads:

1. The eastern channel, which passes up on the east side of the island of Rhode Island. This, as before stated, being shut by a solid bridge, needs no defence by fortifications, other than a field-work or two, which may be thrown up at the opening of a war.

2d. The central channel, which enters from sea by passing between Rhode Island and Canonicut island. This is by far the best entrance, and leads to the best anchorage; and this it is proposed to defend by a fort on the east side of the entrance, designed to be the principal work in the system. This work, called Fort Adams, is nearly completed. On the west side of the entrance it is proposed to place another work; and on an island, called Rose island, facing the entrance, a third work. It is also proposed to repair the old fort on Goat island, just within the mouth; and also old Fort Green, which is a little higher up, and on the island of Rhode Island.

3d. As to the western passage, three modes present themselves: first, by reducing the depth of water by an artificial ledge, so as while the passage shall be as free as it is now for the coasting trade, it shall be shut as to the vessels of war, including steam-vessels; second, by relying on fortifications alone to close the channel; or, third, by resorting in part to one and in part to the other mode just mentioned. Either is practicable; but, being the least expensive and most certain, the estimates are founded on the first.

The total cost of the Narraganset defences is estimated at \$1,817,482.—(Statement 1, tables A, B, D, E, and F.)

Gardiner's bay.—It is uncertain whether this harbor, which would be a very valuable one to an enemy investing this part of the coast, is defensible by fortifications alone. After it shall have been surveyed, it may appear that from one or more positions, the whole anchorage may be controlled by heavy sea mortars. In such a case, the defensive works would not be costly. If it be found expedient to fortify some particular portion of the bay, as an anchorage for steam batteries, (which, however, is not anticipated,) the expense would probably be as great as was anticipated some years since by the engineer department, viz : \$400,000.—(Statement 1, table F.)

Sag Harbor, New York, and Stonington, Connecticut.—Neither of these harbors has been surveyed with reference to defence. The first is possessed of considerable tonnage; and the second, besides being engaged in commerce, is the terminous of a railroad from Boston. \$100,000 may be assigned to the first, and \$200,000 to the other.—(Statement 1, tables E and F.)

New London harbor is very important to the commerce of Long Island sound; and, as a port of easy access, having great depth of water, rarely freezing, and being easily defended, it is an excellent station for the navy. It is also valuable as a shelter for vessels bound out or home, and desirous of avoiding a blockading squadron off Sandy Hook.

In the plan of defence, the present forts (Trumbull and Griswold) give place to more efficient works, whereof the expense is estimated at \$441,000.—(Statement 1, tables C and F.)

Mouth of Connecticut river.—This river has been shown to be subject to the expeditions of an enemy. No survey has been made with a view to its defences; \$100,000 is introduced here as the conjectural cost.—(Statement 1, table F.)

New Haven harbor.—It is proposed to defend this harbor by improving and enlarging Fort Hale, and substituting a new work for the slight redoubt erected during the last war, called Fort Wooster. The expense of both may be set down at \$90,000, exclusive of \$5,000 for immediate repairs of old Fort Hale.—(Statement 1, table F.)

There are several towns between New Haven and New York, on both sides of the sound; none of them are very large as yet, still, most, if not all, are prosperous and increasing. Although, in their present condition, it might not be deemed necessary to apply any money to permanent defences, yet, as part of the present object is to ascertain, as near as may be, the ultimate cost of completely fortifying the coast, it seems proper to look forward to the time when some of these towns may become objects of predatory enterprises of some magnitude. Bearing in mind the probable increase of population in the mean time, and the situation of the places generally, it is thought that \$200,000 will be enough to provide defences for all.—(Statement 1, table F.)

New York harbor.—The objects of the projected works for the security of New York are to cover the city from an attack by land or sea; to protect its numerous shipping; to prevent, as far as possible, the blockade of this great port; and to cover the interior communication uniting this harbor with the Delaware. In the present condition of the defences an enemy would encounter no great opposition, whether his attack were made by land or water.

There are two avenues to the city, namely: one by the main channel, direct from sea, and one by the sound. If an enemy come by the way of the sound, he may now land his forces on the New York side, at Hell Gate, within less than ten miles of New York, and the next day, at the latest, be in the city; or he may land on the Long Island side at the same distance, and in the same time be master of the navy yard and of Brooklyn heights, whence the city of New York

is perfectly commanded; or he may divide his forces and reach both objects at the same moment.

The projected system of defence closes this avenue at the greatest distance possible from the city, namely, at Throg's Point. The occupation of this point will force the enemy to land more than twenty miles from the city on one side, and still further from the navy yard on the other.

A work now in progress at Throg's Point will probably prevent any attempt to force this passage. It will, as we have seen, oblige an enemy to land at a considerable distance from the object; and, as he will then be unable to turn the strong position afforded by Harlem river, the cover on the New York side will be sufficient.

But should he land on the Long island side he might, by leaving parties on suitable positions with a view to prevent our crossing the river and falling on his rear, make a dash at the navy yard, having no obstacle in his front. To prevent this effectually, and also to accomplish other objects, a work should be erected on Wilkins's Point, opposite Throg's Point. This work, besides completing the defence of the channel, would involve a march against the navy yard from this quarter in great danger; since all the forces that could be collected on the New York shore might, under cover of this work, be crossed over to Long island, and fall on the rear of the enemy, cutting off his communication with the fleet. The two works on Throg's and Wilkins's Points may, therefore, be regarded as perfectly protecting, on that side, the city and navy yard.

Against an attack by the main channel there are—

1st. The works in the vicinity of the city, which would act upon an enemy's squadron only after its arrival before the place. They consist of Fort Columbus, Castle Williams, and South Battery, on Governor's island; Fort Wood, on Bedlow's island; and Fort Gibson, on Ellis's island.

It is necessary that these works be maintained, because, in the event of the lower barrier being forced, these would still afford a resource. It is a disadvantage of their positions, however, that the destruction of the city might be going on simultaneously with the contest between these forts and the fleet. They cannot, however, be dispensed with, until the outer barriers are entirely completed, if even then.

2d. At the Narrows, about seven miles below the city, the passage becomes so contracted as to permit good disposition to be made for defence. On the Long island side of the Narrows is Fort Lafayette, which is a strong water-battery standing on a reef at some distance from the shore; and immediately behind it, on the top of the bank, is a small but strong work, called Fort Hamilton. Some repairs being applied to these works, this position may be regarded as well occupied.

On the west side, or Staten island side of the narrows, are the following works belonging to the State of New York, viz: *Fort Richmond*, which is a water-battery; *Battery Hudson*, which is at some height above the water; *Battery Morton*, which is a small battery on the top of the hill; and *Fort Tomkins*, which is also on the top of the hill, and is the principal work. All these need great repairs; but, being once in proper order, would afford a very important contribution to the defence of the passage; nothing further, indeed, being contemplated for this position, except the construction of a small redoubt on a commanding hill, a little to the southwest. The repairs of these works cannot too soon be taken in hand; and it is hoped some arrangement may soon be made with the State authorities to that end.

With the Narrows thus defended, and the works near the city in perfect order, New York might be regarded as pretty well protected against an attack by water through this passage.

But there lies below the narrows a capacious bay, affording good anchorage for any number of vessels-of-war and transports. An enemy's squadron being

in that bay into which entrance is very easy, would set a seal upon this outlet of the harbor. Not a vessel could enter or depart at any season of the year. And it would also intercept the water communication, by the way of the Raritan, between New York and Philadelphia.

The same squadron could land a force on the beach of Gravesend bay, (the place of the landing of the British, which brought on the battle of Long island in the revolutionary war,) within seven miles of the city of Brooklyn, of its commanding height, and of the navy yard, with no intervening obstacle of any sort.

This danger is imminent, and it would not fail, in the event of war, to be as fully realized as it was during the last war, when, on the rumor of an expedition being in preparation in England, 27,000 militia were assembled to cover the city from an attack of this sort. It is apparent that the defences near the city, and those at the Narrows, indispensable as they are for other purposes, cannot be made to prevent this enterprise, which can be thoroughly guarded against only by—

3d. An outer barrier at the very mouth of the harbor. This would accomplish two objects of great consequence, namely, rendering a close blockade of the harbor impossible; and obliging an enemy, who should design to move troops against the navy yard, to land at a distance of more than twenty miles from his object, upon a dangerous beach; leaving, during the absence of the troops, the transports at anchor in the ocean, and entirely without shelter. The hazards of such a land expedition would, moreover, be greatly enhanced by the fact that our own troops, by passing over to Long island under cover of the fort at Wilkins's Point, could cut off the return of the enemy to his fleet, which must lie at or somewhere near Rockaway; time, distance, and the direction of the respective marches, would make, very naturally, such a manœuvre a part of the plan of defence. Against an enemy landing in Gravesend bay, no such manœuvre could be effectual, on account of the shortness of his line of march, as well as of its direction.

In view of these considerations, the board of engineers projected additional works—one for the *east bank* and another for the *middle ground*; these positions being on shoals on either hand of the bar, outside of Sandy Hook. Before determining on the works last mentioned, the board went into much research in order to ascertain whether these shoals were unchangeable, and it was thought to have been fully proved that there had been no material alteration in more than sixty years. This apparent stability of the shoals encouraged the board to devise the project referred to.

Recent surveys have, however, discovered a new or rather another channel. If it be indeed a *new* channel, it shows a want of stability in the shoals that forbids any such structures as the contemplated batteries, and it may be necessary to resort to other means. Suitable means exist, unquestionably, though it may not be best to decide on them until all doubt as to the fixed or changing nature of the channel shall be removed, especially as it must necessarily be some time before the completion of more indispensable works will allow the commencement of these. This may, however, be said with certainty, namely: that, all other means failing, works may be erected on Sandy Hook which will have a good action upon the channel, and under cover of which bomb ketches or steam batteries, or both, may lie. With such an arrangement there would be little probability of the lower bay being occupied as a blockading station.

To recapitulate: The security of the city of New York and the navy yard requires, first, defences on the passage from the sound; namely, the completion of Fort Schuyler on Throg's Point, and the erection of a fort on Wilkins's Point—cost of both, \$976,000; second, the repair of works on Governor's island, on Bedloe's island, and on Ellis's island—estimated cost, \$170,897; third, the repair of the works at the Narrows, including the works belonging to

the State—cost, \$475,000; and, fourth, the erection of outer defences on or near Sandy Hook—estimated by the board of engineers to cost \$3,362,824.

The total cost, exclusive of these last, will therefore be \$1,621,897, or, including these, \$4,984,721.—(Statement 1, tables A, C, and F.)

Delaware bay, Fort Delaware, Fort Mifflin, Delaware breakwater.—The coast from the mouth of the Hudson to the Chesapeake, as well as that on the south side of Long island, is low and sandy, and is penetrated by several inlets; but not one besides the Delaware is navigable by sea-going vessels. The Delaware bay itself, being wide and full of shoals, having an intricate channel, and being much obstructed by ice in the winter, affords no very good natural harbor within a reasonable distance of the sea.

The artificial harbor now in course of construction near Cape Henlopen will, it is hoped, fully supply this need, in which event it must be securely fortified. No plans have, however, as yet been made with that object, and as to the probable cost, nothing better can now be done than to assume the conjectural estimate made some years since in the engineer department, namely, \$600,000.—(Statement 1, table F.)

The lowest point at which the bay is defensible is at Pea Patch island, about forty-five miles below the city of Philadelphia. A fort on that island, to replace the one destroyed by fire; a fort opposite the Pea Patch, on the Delaware shore, to assist in commanding the Delaware channel, and at the same time protect the mouth of the Delaware and Chesapeake canal; a temporary work on the Jersey shore, to be thrown up at the commencement of a war, to assist in closing the channel on that side; together with floating obstructions, to be put down in moments of peril, will effectually cover all above this position—including Philadelphia and its navy yard, Wilmington, Newcastle, the canal before mentioned, and the Philadelphia and Baltimore railroad.

The commencement of the rebuilding of Fort Delaware being delayed by difficulties attending the settlement of new claims to the island on which it is to stand, Fort Mifflin, which is an old work about seven miles below the city of Philadelphia, has been put in good order. This work is ready to receive its armament and its garrison.

The expense of the work on Fort Delaware may be estimated at \$491,000, and of the fort opposite, \$521,000.—(Statement 1, tables C and F.)

Chesapeake bay.—The board of naval officers and engineers intrusted with the selection of sites for a great northern and a great southern naval depot, recommended in their joint reports of 1819 and 1820 Burwell's bay, on James river, for the one, and Charlestown, in Boston harbor, for the other. They also recommended Boston harbor and Narraganset bay, at the north, and Hampton roads, at the south, as chief naval rendezvous. In those reports the commissioners entered at large into the consideration of all the matters relating to these important objects, and reference is now made to those reports for many interesting details.

Hampton roads, James river, Norfolk, and the navy yard.—The works projected for the defence of these are, 1st, a fort at Old Point Comfort—this is called Fort Monroe; 2d, a casemated battery, called Fort Calhoun, on the Rip Rap shoals, opposite Old Point Comfort; and, 3d, a line of floating obstructions extending across the channel from one of these works to the other. It was the opinion of the commission above mentioned that, in the event of a great naval depot being fixed on James river, it might ultimately be proper to provide additional strength by placing works on the positions of Newport News, Wassaw shoals, and Craney Island flats. Such an expansion has, however, since then been given to the present navy yard at Gosport, (opposite Norfolk.) that there is little probability of any other position on these waters being occupied for such purposes.

The great importance of retaining Hampton roads during a war, and of cover-

ing the navy yard, is conceded on all hands. The bearing of this harbor upon the general defence of the Chesapeake bay is, perhaps, equally well understood, it being very evident that a small hostile force would reluctantly venture up the bay, or into York river, or the Rappahannock, or any of the upper harbors, leaving behind them a great naval station, and the common rendezvous of the southern coast—a station seldom in time of war without the presence of a number of vessels just ready for, or just returned from, sea.

A very important bearing upon the security of Norfolk and the navy yard, independent of the closing the channel to those places, is, however, not generally understood, and has been entirely overlooked in the official animadversions (before mentioned) on the system of defence of the board of engineers.

If we suppose no defences at the mouth of the roadstead, or only such as can be disregarded or easily silenced, an enemy might debark his troops in Lynnhaven bay, and despatch them against Norfolk, while his fleet would pass up the harbor to the vicinity of the town, not only covering the flank of his troops, but landing parties to turn any position that might be taken by the army attempting to defend the place; or, instead of landing in the bay, he might at his option land the main body quite near to Norfolk; and, having possession of James river, he would prevent the arrival of any succor in steamboats or otherwise by that channel.

There are two or three defiles on the route from Lynnhaven bay to Norfolk, caused by the interlocking of streams, that, with the aid of field-works, would possess great strength; and being occupied in succession, would undoubtedly delay, if not repulse, an enemy assailing them in front. Since the naval depot seems fixed at Gosport, these must, indeed, be chiefly relied on for its security from land attacks; and timely attention must be given, on the breaking out of a war, to the occupying of these defiles with appropriate defences. These positions possess no value whatever if they can be turned, and without adequate fortifications at the outlet of Hampton roads, there would seem to be no security for Norfolk or the navy yard, except in the presence of a large military force.

On the completion of the projected defences, the circumstances will be very different. Then, those defiles must be attacked in front, because no part of the enemy's force can be landed above the mouth of the roads. But this is not all. The moment an enemy advances towards Norfolk from this point of debarkation, his communication with his fleet will be jeopardized, because, as the defiles do not require a large body to defend them against an attack in front, the greater part of the reinforcements arriving from above, by way of the river, may be landed upon his flanks, or in his rear. An offensive land movement by the enemy, under such circumstances, could be justified only in the case of his finding an entire want of preparation, caused by the unexpected commencement of hostilities. In connexion with this disposition for defence, it may be expedient on the opening of a war, to throw up a field work on the shore opposite the position of Fort Calhoun, which would, besides, contribute to the exclusion from the roadstead of vessels of small draught.

The above remarks show that the fortifications in progress are not less necessary to the security of the navy yard and the city of Norfolk from a land attack, than from an attack by water, and that both these important functions are superadded to the task of defending the only good roadstead of the southern coast, and of contributing, in a very important degree, towards the defence of the Chesapeake bay.

As in the case of Narraganset roads, it has been objected to this system of defence, that, although it may shut up this anchorage, it leaves others in this region open. May we suppose, then, that if there were no other than this harbor, its defence would be justifiable? If so, it would seem that the objection rests on the principle that in proportion as nature has been bountiful to us, we

must be niggard to ourselves ; that, having little, we may cherish it, but, having much, we must throw all away.

The same criticism complains of the unreasonable magnitude of one of these works, (Fort Monroe,) and we concede that there is justice in the criticism. But it has long been too late to remedy the evil. It may not, however, be improper to avail of this opportunity to remove from the country the professional reproach attached to this error. When the system of coast defence was about to be taken up, it was thought best by the government and Congress, to call from abroad a portion of that skill and science which a long course of active warfare was supposed to have supplied. Fort Monroe is one of the results of that determination. It was not easy, probably, to come down from the exaggerated scale of warfare to which Europe was then accustomed ; nor for those who had been brought up where wars were often produced, and always magnified by juxtaposition or proximity, to realize to what degree remoteness from belligerent nations would diminish military means and qualify military objects. Certain it is, that this experiment, costly as it was in the case of Fort Monroe, would have been much more so but for the opposition of some whose more moderate opinions had been moulded by no other circumstances than those peculiar to our own country.

The mistake is one relating to magnitude, however, not to strength. Magnitude in fortification is often a measure of strength ; but not always, nor in this instance. Fort Monroe might have been as strong as it is now against a water attack, or an assault, or a siege, with one-third its present capacity, and perhaps at not more than half its cost. We do not think this work too strong for its position, nor too heavily armed ; and as the force of the garrison will depend mainly on the extent of the armament, the error has caused an excess in the first outlay chiefly, but will not involve much useless expense after completion.

Although there is much important work to be done to complete the fort, it is even now in a state to contribute largely to the defence of the roadstead, and there is no doubt that in a very short time all the casemated parts may be perfectly ready to receive the armament.

This work will be found in statement 1, table C ; \$223,367 being required to complete it.

Fort Calhoun cannot yet be carried forward for want of stability in the foundation. The artificial mass on which it is to stand having been raised out of the water, the walls of the battery were begun some years since, but it was soon found that their weight caused considerable subsidence. On an inspection by engineer officers, it was then decided to keep the foundations loaded with more than the whole weight of the finished work until all subsidence had ceased. The load had hardly been put on, however, before it was injudiciously determined to take it off and begin to build, although the settling was still going on. Happily a better policy prevailed before the construction was resumed, but not before the very considerable expense of removing the load had been incurred, and the further expense of replacing it rendered necessary. It is hoped the whole load will be replaced early the present year.—(Statement 1, table C.) Required to complete the work \$416,000.

It may be expedient, in time of war, by way of providing interior barriers, to erect batteries on Craney island, at the mouth of Elizabeth river, and to put in condition and arm old Fort Norfolk, which is just below the city.

Harbor of St. Mary's.—The central situation (as regards the Chesapeake) of this fine basin, its relation to the Potomac, its depth of water, and the facility with which it may be defended, indicate its fitness as a harbor of refuge for the commerce of the Chesapeake bay, and as an occasional, if not constant, station during war of a portion of the naval force. A survey has been made, but no project has been formed. The engineer department, some years ago, con-
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tured that the cost of defences in this harbor might amount to \$300,000.—(Statement 1, table F.)

Annapolis harbor.—No surveys or plans of defence have been made. The existing works are inefficient and quite out of repair. A former estimate made by the engineer department, amounting to \$250,000, is adopted here.—(Statement 1, table F.)

Harbor of Baltimore.—The proximity of the city to Chesapeake bay greatly endangers the city of Baltimore. In the present state of things, an enemy in a few hours' march, after an easy landing, and without having his communication with his fleet seriously endangered, can make himself master of that great emporium of commerce. There are required for its security two forts on the Patapsco—one at Hawkins's Point, and the other opposite that point, at the extreme end of the flat that runs off from Sollers's Point; these being the lowest positions at which the passage of the Patapsco can be defended. Besides the advantages that will result, of obliging the enemy to land at a greater distance—thereby gaining time, by delaying his march, for the arrival of succor, and preventing his turning the defensive positions which our troops might occupy—it will be impossible for him to endanger the city by a direct attack by water.

The present Fort McHenry, Redoubt Wood, and Covington battery should be retained as a second barrier. The first mentioned is now in good condition, and the repairs required for the others may be applied at the beginning of a war.

The fort on Sollers's Point flats, which should be first commenced, is estimated to cost \$1,000,000.—(Statement 1, table D.)

The fort on Hawkins's Point, (to be found in statement 1, table F,) will cost, it is supposed, \$376,000.

Mouth of Elk river.—The completion of the line of water communication from the Delaware to the waters of the Chesapeake makes it proper to place a fort somewhere near the mouth of Elk river, in order to prevent an enemy from destroying, by a sudden enterprise, the works forming this outlet of the canal. There have been no surveys made with a view to establish such protection, which are estimated at \$50,000.—(Statement 1, table F.)

Cities of Washington, Georgetown, and Alexandria.—Fort Washington covers these cities from any attack by water, and will oblige an enemy to land at some eight or ten miles below Alexandria, should that city be his object, and about twice as far below Washington. It will also serve the very important purpose of covering troops crossing from Virginia with a view to fall on the flanks of an enemy moving against the capital from the Patuxent or the Chesapeake. To put the necessary repairs on Fort Washington will cost about \$20,000.—(See statement 1, table A.)

Cedar Point, Potomac river.—But all these objects would have been better fulfilled had the work been placed at Lower Cedar Point. As it is, however, the contemplated works being constructed in the Patuxent, and the militia of the surrounding country in a due state of preparation, an enterprise against Washington would be a hazardous one.

As giving complete security to the towns in the District, covering more than sixty miles in length of the Potomac, and a large tract of country lying between the Potomac and the Patuxent, the work on Cedar Point should not be omitted. There have been no surveys made of the ground, nor projects of the fort, which, in a conjectural estimate of the engineer department, was set down at \$300,000.—(Statement 1, table E.)

Patuxent river.—The more effectually to protect the city of Washington from a sudden attack by troops landed at the head of navigation in the Patuxent, and to provide additional shelter for vessels in the Chesapeake, a fort has been planned to occupy Point Patience, and another to occupy Thomas's Point, both a short distance up the river. The work on Thomas's Point is (in statement 1,

table D) estimated to cost \$250,000; and the work on Point Patience, (in statement 1, table F,) estimated to cost \$246,000.

It will be perceived that the system of defence for Washington contemplates, first, defending the Potomac on Cedar Point and maintaining a second barrier at Fort Washington; second, defending the mouth of the Patuxent. This system is criticised in the document before referred to in a way to induce the suspicion that it was not understood.

During the last war there was no fort in the Patuxent; and the consequence was, that the British approached by that avenue and occupied the whole river as high as Pig Point—nearly fifty miles from its mouth, and less than twenty miles from the capital; while, in consequence of there being no forts in the Potomac, they occupied that river as high as Alexandria, inclusive; by this latter occupation perfectly protecting the left flank of the movement during its whole advance and retreat. Both flanks being safe, the British had nothing to fear except from a force in front; and that this risk was not great, in the short march of less than twenty miles from his boats, was proved by the issue.

On the ninth day from that on which the fleet entered the Chesapeake the English army was in possession of the capital, having penetrated near fifty miles beyond the point of debarkation. On the twelfth day from the time of landing, the troops were again on shipboard near the mouth of the river. This attack, exceedingly well conceived and very gallantly executed, owed its success entirely to the want of defences, such as are now proposed.

Let us suppose both rivers fortified as recommended, and an enemy landed at the mouth of the Patuxent. If now he attempt this enterprise his march will be prolonged by at least four days; that is to say, it will require more than sixteen days, during which time he will be out of communication with his fleet, as regards supplies and assistance.

The opposition to his invasion will begin at the landing, because our troops having now nothing to fear as to their flanks, either from the Potomac or Patuxent, will dispute every foot of territory; and although he should continue to advance, it must be at a slower rate.

While he is thus pursuing his route towards Washington, the forces of Virginia will be crossing the Potomac and concentrating at Port Tobacco, or some position between that place and Fort Washington, preparatory to falling on his flank and rear. This would seem to be conclusive; for it is difficult to conceive of troops persevering in an expedition when every moment will not only place them further from success, but greatly increase their need of it. Railroads reach from near the crossing places of the Potomac to the very heart of the country south; and a very few days would bring forward a large force, all of which would arrive upon the rear of the enemy.

It is said in the criticism that, if shut out of the Patuxent, the enemy might land between the mouth of that river and Annapolis, and thence proceed against Washington. But the same difficulties belong to this project, and a new difficulty is added. The Virginia forces arrive, as before, and assail his flank either between the Potomac and Patuxent, or between the Patuxent and the Chesapeake; and there is, besides, the Patuxent for the enemy to cross both in going and returning—itself a formidable military obstacle.

It is said, also, that the landing may be made in the Potomac; but this only proves that the system animadverted on had not been studied, it being a fundamental principle of the system that such landing must be prevented by fortifying the rivers as low down as possible.

The southern coast, stretching from Cape Hatteras to the southern point of Florida, is invariably low, and for the greater part sandy; much resembling the coast from the above-mentioned cape to Montauk Point, on the east end of Long Island.

A ridge of sand, here and there interrupted by the alluvion of the rivers, ex-

tends through its whole length. This ridge, in certain portions, lies on the main land, while in others it is divided therefrom by basins or "sounds" of various width and depth, and is cut up into islands by numerous channels which connect these interior waters with the sea. Wherever this sand ridge is interrupted, its place is occupied by low and marshy grounds, bordering the principal and the many lesser outlets of the rivers.

Ocracock inlet, N. C.—The shallowness of the water on the bars at this inlet effectually excludes all vessels-of-war—at least, all moved by sails. But as this is an outlet of an extensive commerce, and as, through this opening, attempts might be made in small vessels, barges, or the smaller class of steam vessels, to destroy this commerce, or to interrupt the line of interior water communication, timely preparation must be made of temporary works equal to defence against all such minor enterprises.

Beaufort harbor, N. C.—A work called Fort Macon has been erected for the defence of this harbor, which will require some repairs. Some operations are also called for to protect the site from the wearing action of the sea. (Statement 1, table A.) Estimate, \$10,000.

Mouths of Cape Fear river, N. C.—The defence of the main channel of Cape Fear requires, in addition to Fort Caswell, (now nearly completed,) on Oak island, another fort on Bald Head. And the defence of the smaller channel will require a redoubt on Federal Point. The battery magazine, block-house, &c., at Smithville, should remain as accessories. *Fort Caswell*, Oak island, (statement 1, table C,) requires \$6,000 to complete it; the *fort on Bald Head* (statement 1, table F) will require \$180,000; the *redoubt on Federal Point* (statement 1, table F) will require \$18,000; and the battery, &c., called *Fort Johnston*, at Smithville, (statement 1, table A,) \$5,000.

Georgetown harbor, S. C.—The first inlet of any consequence south of Cape Fear river is at the united mouths of the Waccamaw, Pedee, and Black rivers, forming Georgetown harbor; which is a commodious and capacious bay, having sufficient water within, and also upon the bar near the mouth, for merchant vessels and small vessels-of-war. A survey of this harbor was begun many years ago, but never completed, and no projects for defence have been made. It is probable that a work placed near Moscheto creek, or on Winyaw Point, would give adequate strength, at the cost of about \$250,000.—(Statement 1, table E.)

Santee river and Bull's bay.—About ten miles south from Georgetown are the mouths of the Santee, the largest river in South Carolina. It is not known whether the bars at the mouths of this river have sufficient water for sea-going vessels. The same uncertainty exists as to the depth into Bull's bay. It may be sufficient to consider these and the other inlets between Georgetown and Charleston as calling for small works capable of resisting boat enterprises, and to assign as the cost \$100,000. Should they prove to be navigable for privateers they will require a larger expenditure.—(Statement 1, table F.)

Charleston, S. C.—This city, situated at the junction of Ashley and Cooper rivers, is about five miles, in a direct line from the sea. Between it and the ocean there is a wide and safe roadstead for vessels of any draught. Upon the bar, lying three or four miles outside of the harbor, there is, however, only water enough for smaller frigates and sloops-of-war. On the southwest side of the harbor is James's island, in which are several serpentine passages, more or less navigable for boats, barges, and small steam vessels; some of them communicate directly with the sea and Stono river. Whappoo cut, the most northerly passage from the Stono to Charleston harbor, enters Ashley river opposite the middle of the city.

Interior natural water communications exist, also, to the southwest of Stono river, connecting this with North Edisto river; the latter with South Edisto

and St. Helena sound; this again, with broad river; and, finally, this last with Savannah river.

On the north side of the harbor of Charleston lies Sullivan's island, separated from the main by a channel navigable only by small craft. On the north-west side of this island is an interior water communication, which extends to Bull's bay, and even beyond, to the harbor of Georgetown.

From this sketch it is apparent that it will not do to restrict the defences to the principal entrance of the harbor. The lateral avenues must also be shut. And it is probable that accurate surveys of all these avenues will show that the best mode of defending them will be by works at or near the mouths of the inlets, as the enemy will be kept thereby at a greater distance from the city; the lesser harbors formed by these inlets will be protected, and the line of interior water communication will be inaccessible from the sea.

No position for the defence of the principal entrance to Charleston harbor can be found nearer to the ocean than the western extremity of Sullivan's island. This is, at present, occupied by Fort Moultrie—a work of some strength, but by no means adequate to its object, its battery being weak, and the scarp so low as to oppose no serious obstacle to escalade. How far this work, by a modification of its plan and relief, may be made to contribute to a full defence of the harbor, has not yet been determined. But so long as it is the only work at this, the principal point of defence, it must be kept in good condition for service; and no alterations that will disturb this efficiency should be undertaken. The repairs now indispensable will cost \$10,000.—(Statement 1, table A.)

On a shoal nearly opposite to Fort Moultrie the foundation of a fort has been begun, which will have a powerful cross-fire with Fort Moultrie. This is called Fort Sumter. (Statement 1, table C.) To complete this work will require, it is estimated, \$286,000.

In the upper part of the harbor is Castle Pinckney, on Shuter's Folly island. This requires some repairs, estimated at \$7,000.—(Statement 1, table A.)

Stono, North Edisto, and South Edisto.—All these must be fortified, at least in such a manner as to protect these inlets from enterprises in boats or small vessels. To that end, \$50,000 may be assigned to each.—(Statement 1, table F.)

St. Helena sound.—The proper defences cannot be pointed out till the sound shall have been surveyed. Although there is supposed to be no great depth of water on the bar, it is known to be navigable for the smaller class of merchantmen and for steamboats, and to have a navigable communication with the head of Broad river, or Port Royal, intersecting the interior navigation between Charleston and Savannah. The estimate is \$150,000.—(Statement 1, table F.)

Broad river, or Port Royal roads.—The value of this capacious roadstead as a harbor of refuge depends on the depth that can be carried over the bar; on the distance of this bar beyond the line of coast, and on the means that may be applicable of lessening the danger of crossing it. This is supposed to be the deepest bar on the southern coast. Should there prove to be water enough for frigates, and should it be practicable to make the passage over the bar safe and easy, by the erection of light-houses on the shore and lights, or other distinct guides on the bar, this harbor, situated within sixty miles of the city of Charleston and twenty of Savannah river, intersecting the interior water communication between these cities, thereby securing the arrival of supplies of every kind, would possess a high degree of importance, not only as a harbor of refuge, but also as a naval station.

The survey of the exterior shoals, constituting the bar, should be made with the greatest care and all possible minuteness. Only when this shall have been done can the true relation of this inlet to the rest of the coast be known, and on this relation the position and magnitude of the required defences will depend. For the present, the estimate made some years ago by the engineer department is adopted, namely, \$300,000.—(Statement 1, table E.)

Savannah, and mouth of Savannah river, Georgia.—Mention has been made of the natural interior water communication along the coast of South Carolina. A similar communication extends south from the Savannah river as far as the St. John's, in Florida. Owing to these passages the city of Savannah, like Charleston, is liable to be approached by other avenues than the harbor or river, and accordingly its defences must have relation to these lesser as well as great channels.

The distance from the mouth of Wassaw sound, or even Ossabaw sound, (both to the southward of Savannah river,) to the city is not much greater than from the mouth of the river, and an enterprise may proceed the whole distance by water, or part of the way by water and part by land, from either inlet or from both. As in the case of like channels in the neighborhood of Charleston, it cannot now be determined where they can be defended most advantageously. It is hoped, however, that the localities will permit the defences to be placed near the inlets, because thus placed they will serve the double purpose of guarding the city of Savannah and covering these harbors, which, in time of war, cannot but be very useful.

The defence of Savannah river is not difficult. A fort on Cockspur island, lying just within the mouth, and perhaps for additional security another on Tybee island, which forms the southern cape at the mouth of the river, would prevent the passage of vessels up the channel and cover the anchorage between Tybee and Cockspur.

Old Fort Jackson, standing about four miles below the city, should be maintained as a second barrier, both as respects the main channel and the passages which come into the river from the south, which last would not at all be controlled by works on Cockspur or Tybee. Fort Pulaski, on Cockspur island, is well advanced, and to a certain extent is even now efficient, measures being now in hand for mounting the lower tier of guns; \$215,000 are required to complete the works and the outworks and appendages.—(Statement 1, table C.) To fortify Tybee island may require \$120,000, (statement 1, table E,) and to repair Fort Jackson \$50,000.—(Statement 1, table A.)

Wassaw sound, Ossabaw sound, St. Catharine's sound, at the mouth of Medway river; Sapelo sound, Doby inlet, Altamaha sound, at the mouth of Altamaha river; St. Simon's sound, at the mouth of Buffalo creek; St. Andrew's sound, at the united mouths of the Scilla and Santilla rivers; and Cumberland sound, at the mouth of St. Mary's river.—All these communications with the ocean are highly important as regards the line of interior navigation, and several of them as affording access to excellent harbors. The last, and one or two others, are known to be navigable to the largest sloops-of-war and merchantmen, and some of the others are but little inferior, as regards depth of entrance or safety of anchorage.

All these openings have yet to be surveyed; some of them are probably easily defensible by forts and batteries, while others may require the aid of floating defences.

It is an important principle, bearing peculiarly on the defence of the whole southern coast, that on a shore possessing few harbors it is at the same time more necessary to preserve them all for our own use, and more easy to deprive an enemy of that shelter without which a close blockade cannot be maintained. This principle is enforced in the instance of our southern coast by the two following weighty considerations, namely: first, its remoteness from the nearest naval rendezvous, the Chesapeake, which is on a mean 600 miles distant, and to leeward both as to wind and current; and second, its being close upon the larboard hand as they enter the Atlantic of the great concourse of vessels passing at all seasons through the Florida channel. While, therefore, this part of the coast, from the concentration of vessels here, is in great need of protection

of some sort, naval aid can be extended to it only with difficulty, and at the risk of being cut off from all retreat by a superior enemy.

Accurate and minute surveys, which will enable our vessels, whether pursued by an enemy or suffering by stress of weather, to shun the dangers which beset the navigation of these harbors, and properly arranged defences to cover them when arrived, seem to be indispensable.

When these harbors shall be fortified, the operation of investing the coast and watching the great outlet of commerce through the Florida passage will be a difficult and hazardous one to an enemy, to whom no perseverance or skill can avail to maintain a continuous blockade, while, on the part of our small vessels-of-war, steam frigates, and privateers, the same sort of supervision will be at all times easy and safe.

Nothing better can now be done than to assume \$200,000 as the average cost of defending each of the nine entrances; giving a total of \$1,800,000.—(Statement 1, tables E and F.)

St. Augustine, Florida.—This, the most southern of the harbors on the Atlantic, and the key to the eastern portion of Florida, is accessible to the smaller class of merchantmen, to privateers, and to steam vessels, and requires a certain amount of protection from attacks by war. It is, therefore, proposed to put that part of the old Spanish fort (Fort Marion) that commands the harbor in a serviceable state, which will require \$50,000.—(Statement 1, table A.)

Having now passed along the whole Atlantic coast, from Passamaquoddy to Cape Florida, pointed out every harbor of any consequence, and specified every work that a thorough system of defence will require, we will, in order to give a comprehensive view of the number, cost, armament, and garrisons of the works, refer to statement 1, accompanying this report. In that statement the works are divided into tables, showing separately, 1st, (table A,) the old works already repaired and those proposed to be repaired and retained in the system of defence; 2d, (table B,) new works completed; 3d, (table C,) works under construction; 4th, (table D,) works to be first commenced; 5th, (table E,) works to be commenced next after those in table D; 6th, (table F,) works to be last commenced.

The most essential works on the Atlantic coast are included in the first five tables, and, it appears from the recapitulation, that for these there will be required, for garrisons, in time of war, 28,720 men; for the armament, 5,748 pieces of ordnance of every kind; and for the expense yet to be incurred, \$9,476,767.

We consider it to be our duty to estimate for the last class of works also, (table F,) although it must be a long time before permanent works for these positions can be commenced. For these there will be required, in addition, for war garrisons, 25,545 men; for armament, 4,790 pieces of ordnance; and for the expense of erection, \$14,241,824.

It must be here stated that, as to a few of the works in table F, fuller information may require them to be elevated into some of the earlier classes.

SEA-COAST FROM CAPE FLORIDA TO THE MOUTH OF THE SABINE.

The first positions that present themselves, on doubling around Cape Florida into the Gulf of Mexico, are *Key West* and *the Dry Tortugas*.

This board concur in the opinions heretofore expressed in favor of these fine harbors, and they beg leave to refer, for very interesting statements, in relation to the latter harbor especially, to a letter from Commodore Rodgers to the Secretary of the Navy, July 3, 1829, (Senate documents, 1st session 21st Congress, vol. 1, No. 1, page 236,) and letter from the Secretary of the Navy, March 25, 1830, (Senate documents, 1st session 21st Congress, vol. 2, No. 111, page 1.)

A naval force, designed to control the navigation of the Gulf could desire no

better position than Key West or the Tortugas. Upon the very wayside of the only path through the Gulf, it is at the same time well situated as to all the great points therein. It overlooks Havana, Pensacola, Mobile, the mouths of the Mississippi, and both the inlet and outlet of the Gulf.

The Tortugas harbors in particular are said to afford perfect shelter for vessels of every class, with the greatest facility of ingress and egress. And there can be no doubt that an adversary in possession of large naval means would, with great advantage, make these harbors his habitual resort and his point of general rendezvous and concentration for all operations on this sea. With an enemy thus posted, the navigation of the Gulf by us would be imminently hazardous, if not impossible, and nothing but absolute naval superiority would avail anything against him. Mere military means could approach no nearer than the nearest shore of the continent.

It is believed that there are no harbors in the Gulf at all comparable with these that an enemy could resort to with his larger vessels. To deprive him of these would therefore be interfering materially with any organized system of naval operations in this sea. The defence of these harbors would, however, do much more than this. It would transfer to our own squadron, even should it be inferior, these most valuable positions, and it would afford a point of refuge to our navy and our commerce at the very spot where it would be most necessary and useful.

In this report, already too much extended, we forbear to enlarge on this topic, merely adding that the complete and certain defence will not be difficult. By occupying two, or at most three, small islands, the harbors of the Dry Tortugas (there being an inner and an outer harbor) may be thoroughly protected. The works must be adequate to resist escalade, bombardment, and cannonade from vessels, and to sustain a protracted investment; but as they will not be exposed to any operation resembling a siege, there can be no difficulty in fulfilling the conditions. They must have capacious store-rooms, be thoroughly bomb-proof, and be heavily armed.

The fortification of Key West should be of a similar character.

No details can be given until all these positions have been minutely surveyed with reference to defence.

The sum of \$3,000,000 was, some years ago, assumed by the engineer department as necessary to provide defences for the Tortugas and for Key West, and this estimate may now be taken as ample.—(Statement 2, table F.)

Turning now to the shore of the Gulf, we find a portion, namely, from Cape Florida to Pensacola, that has never been examined with particular reference to the defence of the harbors. Within this space there are *Charlotte harbor*, *Espiritu Santo bay*, *Apalachicola bay*, *Apalachie bay*, *St. Joseph's bay*, and *Santa Rosa bay*. Nothing better can now be done than to assume for these the estimate formerly presented by the engineer department, viz: \$1,000,000 for all.—(Statement 2, table F.)

It may be remarked, as applying to the whole Gulf coast, that, from the relative geographical position of this part of the seaboard, and the country interested in its safety, from the unhealthiness of the climate, nature of the adjacent country, and mixed character of the inhabitants, it will be some time before that portion within supporting distance, whose welfare may be endangered by an enemy, will be competent, of itself, to sustain a serious attack from without. Upon the Atlantic seaboard the Alleghanies crowd the people down upon the shore, every important point on the coast being surrounded by a population dense now and every day rapidly increasing in numbers, while the ocean and the interior parallel communications transmit rapid aid to the right and left. The coast of the Gulf, however, is thinly peopled in itself, is remote from succor from behind, and is almost inaccessible to lateral assistance. Those reasons, therefore, which tend to establish the necessity of an organized, permanent,

and timely system of defence for the whole seaboard of the United States, apply to this part of it with peculiar force.

We now pass on to the remaining points of defence on the Gulf.

Pensacola bay.—The upper arms of this considerable bay receive the Yellow Water or Pea river, Middle river, and Escambia river. The tributaries of the last, interlocking with the Alabama and the Chattahoochee, seem to mark the routes whereby, at some future day, canals will convey a part of the products of these rivers to Pensacola, while the qualities and position of the harbor and the favorable nature of the country have already marked out lines of railroad communication with a vast interior region.

Santa Rosa sound extends eastward, from the lower part of the bay, into Santa Rosa bay. On the west the lagoons of Pensacola, Perdido, and Mobile bays, respectively, interlock in such a manner as to require but a few miles of cutting to complete a navigable channel from the first to the last named bay, and thence, through an existing interior water communication, to the city of New Orleans.

Pensacola bay has rare properties as a harbor. It is now accessible to frigates, and there is reason to hope that the bar may be permanently deepened.

The bar is near the coast, and the channel across it straight and easily hit. The harbor is perfectly landlocked, and the roadstead very capacious. There are excellent positions within for repairing, building, and launching vessels, and for docks and dock yards in healthy situations. The supply of good water is abundant. The harbor is perfectly defensible. These properties, in connexion with the position of the harbor as regards the coast, have induced the government to select it as a naval station and place of rendezvous and repair.

An excellent survey has been made of the bay of Pensacola, sufficing to form the scheme of defence for the town and harbor. Regarded, however, as an important naval station and place of rendezvous and repair, which it now is, further surveys, extending a greater distance back from the shores, delineating accurately the face of the country and showing the several avenues by land and water, are found to be necessary.

The defences of the water passage, as projected, are nearly complete, \$22,000 being asked to finish them. A work is just begun at the position of the Barrancas. It is indispensable, in connexion with one or two other small works designed to cover the navy yard from a lateral attack through the western bays. The Barrancas work may require \$100,000, and the others \$200,000; making a total for Pensacola of \$322,000.—(Statement 2, tables A, C, and F.)

Perdido bay.—This bay is intimately related to Pensacola and Mobile bays, both as regards security and intercommunication, and should be carefully surveyed with a view to these objects. It must be fortified, and the cost may be \$200,000.—(Statement 2, table F.)

Mobile bay.—The plan of defence for this bay comprises a fort (now needing some repairs) for Mobile Point. Another fort is projected for Dauphin island, and a tower for the defence of Pass-au-Heron. The estimates for all require \$915,000.—(Statement 2, tables A, E, and F.)

New Orleans and the delta of the Mississippi.—The most northern water communication between the Mississippi and the Gulf is by the passage called the Rigolets, connecting Lake Borgne and Lake Pontchartrain. The next is the pass of Chef Menteur, also connecting these lakes. Through these passages an enemy, entering Lake Pontchartrain, would, at the same time that he intercepted all water communication with Mobile and Pensacola, be able to reach New Orleans from the southern shore of the lake; or he might continue onward through Lake Maurepas, Amité river, and Iberville river, thereby reaching the Mississippi at the very head of the delta; or, landing within the mouths of the Chef Menteur, he might move against the city along the ridge of the Gentilly road.

To the southwest of Chef Menteur, and at the head of Lake Borgne, is Bayou Bienvenue, a navigable channel, (the one followed by the English army in the last war,) not running quite to the Mississippi, but bounded by shores of such a nature as to enable troops to march from the point of debarkation to the city.

These avenues are defended by Fort Pike at the Rigolets; by Fort Wood at Chef Menteur; by a small fort at Bayou Bienvenue, and by a tower at Bayou Dupré.

The defences of the Mississippi are placed at the Plaquemine turn, about seventy miles below New Orleans—the lowest position that can be occupied. Fort Jackson is on the right bank, and Fort St. Philip, a little lower down, on the left.

All these forts have been abandoned for several years, and, having received no attention in the way of timely repairs, now require repairs somewhat extensive, especially Forts Jackson and St. Philip, on the Mississippi. The following sums, it is believed, will be required to place all these works in perfect order, viz: Fort Pike, \$5,000; Fort Wood, \$3,580; fort on Bayou Bienvenue, \$2,500; Tower Dupré, \$400; Fort Jackson, \$20,000, and Fort St. Philip, \$3,300.—(Statement 2, table A.)

The most western avenue by which New Orleans is approachable from the sea passes on the west side of the island of Grande Terre into Barrataria bay, which is an excellent harbor for a floating force guarding the coasting trade on that side of the Mississippi. From this bay there are several passages leading to New Orleans. The estimate for a work which is now about to be begun on Grande Terre island is \$325,000.—(Statement 2, table C.)

Several times in this report we have alluded to circumstances which would demand the employment of floating defences, in addition to fixed defences upon the shore. We have here an instance in which that kind of defence would be very useful. Fortifications will enable us to protect New Orleans even from the most serious and determined efforts of an enemy; but, owing to the great width of some of the exterior passages, we cannot, by fortification alone, deprive an enemy of anchorages, (especially that of Chandeleur island,) nor cover entirely the exterior water communication between the Rigolets and Mobile. We must, therefore, either quietly submit to the annoyance and injury that an enemy in possession of these passages may inflict, or avert them by a timely preparation of a floating force adapted to their peculiar navigation, and capable, under the shelter of the forts, of being always on the alert, and of assuming an offensive or defensive attitude, according to the designs, conduct, or situation of the enemy.

Our examination of the coast from Cape Florida to the Sabine having now been completed, we will, as in the case of the Atlantic coast, refer, for a comprehensive view of the number, cost, armament, and garrison of the works, to statement 2, wherein the works are divided into tables similar to those of statement 1.

The more essential works on the Gulf coast, included in the first five tables, will require for garrison, in time of war, 4,420 men; for the armament, 794 pieces of ordnance of every kind; and for the expense yet to be incurred, \$516,780.

The works comprised in the last table (F) are generally such as may be postponed to a late day. But among them have been placed some (as, for example, those for Tortugas and Key West) as to which the examination has not been sufficiently minute to decide to what class they really appertain.

In this age of great improvements in the means of locomotion, it would be unwise to decide, without pressing need, on the details of the floating force required at certain points on the Atlantic and Gulf of Mexico coasts—perhaps even on the nature of the moving power. Although the probability undoubtedly

is, that the power will be steam, genius may, in the interim, devise something still better than steam.

And we may here remark, in relation to the preparation of steam vessels for warlike purposes generally, that wisdom would seem to direct a very cautious and deliberate progress. Every new vessel may be expected to surpass, in important particulars, all that had preceded; and, to surpass the more, as each succeeding vessel should be the result of careful study and trial of the preceding.

It may be considered unreasonable to expect that steam itself will give way to some agent still more potent, and at the same time not less safe and manageable. But it certainly is no more than probable that steam vessels now under construction may be regarded almost as incumbrances within ten years.

A *deliberate* advance in this branch of naval construction is recommended the more by our ability to construct these vessels in large numbers when needed, the timber being collected in the meantime.

Referring now to the tables which accompany this report:

Statement 1 includes all works from Passamaquoddy to Cape Florida; statement 2, all works from Cape Florida to the mouth of the Sabine; each statement comprising six tables, as before mentioned.

In relation to every work executed, in progress, or merely projected, the tables show the garrison, the ordnance of every description, the sums already expended, and the final cost.

As to works not yet planned, a portion of the same particulars are exhibited, founded on conjecture merely; of course, without laying claim to accuracy, but still as approximations, affording some indication of the final result.

It may be well to give here a summary of all these tables.

The works which are likely to be erected on the Atlantic, within a reasonable time, and which are regarded as necessary to a good system of defence, will require war garrisons, amounting to 28,720 men; and they will require a further expenditure of \$9,176,767. Works called for in like manner upon the Gulf of Mexico coast will need 4,420 men to garrison them, and a further expenditure of \$516,780. Of the *whole coast*, therefore, the garrisons will amount to 33,140 men, and the expenditures to \$9,993,547.

The remaining works comprised in table F, of both statements, will require 30,695 men, and cost \$19,521,824.

Making the grand total for the whole sea-coast of the United States in garrisons for the works 63,835 men, and in cost \$29,515,371.

In addition to these statements as to the fortifications, there are two corresponding statements of the cost of the ordnance, of the carriages, and of a certain supply of powder and shot or shells for each piece, one statement relating to the Atlantic coast, and the other to the Gulf of Mexico coast. From these it appears that for the works likely to be erected on the Atlantic coast, within a reasonable time, (that is to say, for the works comprised in the first five tables, A, B, C, D, and E,) there will be needed 2,483 pieces of ordnance, and 4,511 carriages, which will cost \$2,252,290.

For similar works on the Gulf of Mexico coast, there will be needed 296 pieces of ordnance, and 495 carriages, at a cost of \$240,720.

The remaining works named in tables F, of both statements, will require, in addition, 5,447 guns and 5,554 carriages, which will cost \$3,735,330.

Making the grand total required for the whole sea-coast 8,226 guns and 10,560 carriages, at a cost of \$6,228,340.

The time required to construct and put in order the whole system must depend on the amount of the annual appropriation. All that need now be said on the subject is, that in an undertaking necessarily involving so much time, and of such vital importance, there should be no relaxation of diligence. With all diligence, many years must necessarily be consumed. But the work may be

too much hurried, as well as too much delayed. There is a rate of progress at which it will be executed in the best manner, and at the minimum cost. If more hurried it will be defective in quality, and more costly if delayed.

France was at least fifty years completing her maritime and interior defences.

In the report presented by the engineer department, in March, 1836, (Senate document, 1st session 24th Congress, vol. 4, No. 293,) there is a demonstration of the actual economy that will result from an efficient system of sea-coast defence, which is to the following effect, referring to the document itself for details.

There is first supposed to be an expedition of 20,000 men at Bermuda or Halifax ready to fall upon the coast. This will make it necessary, if there be no fortifications, to have ready a force at least equal at each of the following points, namely: 1st. Portsmouth and navy yard. 2d. Boston and navy yard. 3d. Narragansett roads. 4th. New York and navy yard. 5th. Philadelphia and navy yard. 6th. Baltimore. 7th. Norfolk and navy yard. 8th. Charleston, South Carolina. 9th. Savannah; and 10th. New Orleans; to say nothing of other important places.

At each of these places, except the last, 10,000 men drawn from the interior, and kept under pay, will suffice, the vicinity being relied on to supply the remainder. At New Orleans, 17,000 men must be drawn from a distance. In a campaign of six months, the whole force will cost at least \$26,750,000.

The garrisons necessary to be kept under pay for the fortifications in these places will cost for the same time \$8,430,500. The difference (\$18,319,500) will then be only \$3,448,156 less than the whole expense of building these defences, viz: \$21,767,656. Whence it follows that the expense of these erections would be nearly compensated by the saving they would cause in a single campaign.

All which is respectfully submitted.

For the board:

JOS. G. TOTTEN,
Colonel of Engineers.

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Fort Gibson, Ellis's island, N. Y.	Fort Warren, George's island, Boston, Mass.	Fort Adams, Newport, R. I.	Fort Schuyler, Thine's Neck, N. Y.	Fort Delaware, Delaware river.	Fort Monroe, Old Point Comfort, Va.	Fort Calhoun, Hampton roads, Va.	Fort Casswell, Oak island, N. C.	Fort Sumter, Charleston, S. C.	Fort Pulaski, Cockspur island, Georgia.	Fort Hamilton, New York harbor, N. Y.	Fort Lafayette, New York harbor, N. Y.	Fort Washington, Potomac river, Md.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	Fort Mifflin, Delaware river, Penn.	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Repairs completed.

Not Belonging to the State of New York.

ing to the State of New York.
Not projected; guns, cost, &c., conjectural.

...Garrison and armament will contribute to those of new fort.

ment will contribute to
Included in table B.

No. 1.—Of the fortifications constructed, constructing, &c.—Continued.

Classification.	Designation of the works.	ARMAMENT.															Total.	Expended.	Required to complete.	Total cost of repairs or construction.
		42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Cannades.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.	Cornets.				
4	Works in Portsmouth harbor, N. H. ....	.....	45	52	4	6	5	9	16	9	.....	4	9	2	1	2	150	300,000	300,000
5	Fort Pickering, Salem, Mass. ....	.....	16	21	2	2	3	6	11	7	.....	1	4	.....	.....	.....	73	174,000	174,000
6	Fort on Jack's Point, Marblehead, Mass. ....	.....	32	20	2	2	3	10	7	.....	1	4	.....	.....	.....	.....	88	144,000	144,000
7	Works at Provincetown, Cape Cod, Mass. ....	.....	40	56	.....	.....	.....	30	16	.....	.....	.....	.....	.....	.....	.....	900	600,000	600,000
8	Works at New Bedford, Mass. ....	.....	45	52	4	6	5	9	16	9	.....	4	9	2	1	2	150	300,000	300,000
9	Fort on Rose Island, Narragansett roads, R. I. ....	.....	30	97	21	.....	.....	.....	12	.....	.....	1	3	.....	.....	.....	94	150,000	150,000
10	Fort on Soler's Point flats, Md. ....	.....	800	38	78	33	.....	.....	12	.....	.....	.....	.....	.....	.....	.....	159	1,000,000	1,000,000
11	Fort on Thomas's Point, Patuxent river, Md. ....	.....	50	95	2	.....	3	6	6	9	.....	1	2	.....	.....	2	69	259,000	259,000
	Deduct garrison and guns of Nos. 4, 7, 8, and 15, of A.	108	424	400	22	29	33	22	126	12	6	35	10	10	5	16	1,327	3,425,000	3,425,000	
		.....	8	23	.....	.....	9	.....	6	.....	3	6	.....	.....	.....	.....	55	.....	.....
		5,740	108	416	22	29	33	22	126	12	3	29	10	10	5	16	1,372	3,425,000	3,425,000	
E.—Works to be commenced next after those in D.																				
1	Fort Preble, Portland harbor, Me.	8	15	18	4	4	6	10	6	9	.....	.....	.....	.....	1	4	78	155,000	155,000
2	Works at Gloucester, Mass.	16	30	32	.....	.....	.....	10	8	.....	1	9	.....	.....	.....	.....	100	200,000	200,000
3	Cinling Broad Sound Pass, Boston harbor, Mass. ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	210,000	210,000
4	Works at Barnstable Point, Plymouth, Mass. ....	.....	.....	33	4	4	3	.....	4	.....	.....	.....	.....	.....	.....	.....	50	100,000	100,000
5	Works at Gurnet Point, Conn. ....	.....	20	28	.....	.....	.....	6	10	.....	.....	.....	.....	.....	.....	.....	75	200,000	200,000
6	Fort on Cedar Point, Potomac river, Md. ....	.....	94	50	9	4	6	10	8	.....	1	3	.....	.....	.....	.....	110	300,000	300,000
7	Works at Georgetown harbor, S. C. ....	.....	50	44	9	4	6	10	8	.....	.....	.....	.....	.....	.....	.....	100	250,000	250,000
8	Works in Port Royal harbor, S. C. ....	.....	50	44	9	4	6	10	8	.....	.....	.....	.....	.....	.....	.....	110	300,000	300,000
9	Works on Tybee Island, Savannah river, Ga. ....	.....	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92	136,000	136,000
10	Works at Cumberland sound, St. Mary's river, Georgia. ....	.....	90	56	9	4	3	10	8	.....	.....	.....	.....	.....	.....	.....	110	200,000	200,000
		34	324	324	115	24	26	70	70	6	4	19	.....	8	1	.....	756	2,025,000	2,025,000

P. — It's over, so do just remember, ed.

No.	Work.	Estimated cost.	Actual cost.	Remarks.
1	Works at Esplanade harbor, Maine	550	100,000	
2	Works at Mount Desert island, Maine	1,000	100,000	
3	Works at Mount Desert island, Maine	1,000	100,000	
4	Works at Mt. George's bay, Maine	135	50,000	
5	Works at St. George's bay, Maine	1,000	100,000	
6	Works at Danville, Maine	1,000	100,000	
7	Works at Broad bay, Maine	150	135,000	
8	Works at Sheepscot bay, Maine	150	75,000	
9	Works at the mouth of Sag river, Maine	150	100,000	
10	Works at the mouth of Kennebec river, Me.	150	50,000	
11	Works at York, Maine	950	51,000	
12	Works at Newburyport, Mass.	125	174,000	
13	Works at Beverly, Mass.	180	1,090,000	
14	Works at Nahant, Mass.	280	250,000	
15	Works at Nahant, Mass.	280	198,000	
16	Works at Fort Sewall, Marblehead, Mass.	1,700	100,000	
17	Fort and outworks at Nantasket Head, Boston, Mass.	1,700	1,090,000	
18	Redoubt on Hog island, Boston harbor, Mass.	500	307,000	
19	Works at Nantucket harbor, Mass.	625	198,000	
20	Works at Edgartown, Mass.	625	100,000	
21	Works at Edgartown, Mass.	625	48,000	
22	Works at Hingham's Hole, Mass.	1,900	42,000	
23	Works at Tarpaulin cove, Mass.	1,900	300,000	
24	Works at Cranston island, R. I.	500	400,000	
25	Closing west passage of Narragansett roads, R. I.	500	100,000	
26	Fort Griswold, New London, Conn.	250	307,000	
27	Works at the mouth of Connecticut river, Conn.	125	198,000	
28	Fort Hale, New Haven harbor, Conn.	125	100,000	
29	Fort Wooster, New Haven harbor, Conn.	125	48,000	
30	Works for harbors and towns between New Haven and New York	500	42,000	
31	Works in Gardiner's bay, Long Island sound, N. Y.	750	300,000	
32	Works in Sag Harbor, N. Y.	250	400,000	
33	Fort on Wilkins' Point, Long Island, N. Y.	1,335	100,000	
34	Redoubt in advance of Fort Tompkins, Staten island, N. Y.	800	688,000	
35	Fort on Middle Ground shoal, Sandy Hook, N. Y.	1,760	52,000	
36	Fort on East Bank shoal, Sandy Hook, N. Y.	1,760	1,681,412	
37	Fort at Delaware breakwater	1,125	1,681,412	
38	Fort opposite Fort Delaware, Del.	760	600,000	
39	Fort on Elk river, Md.	169	531,000	
40	Fort on Hawkins' Point, Md.	800	50,000	
41	Works at Annapolis harbor, Md.	500	376,000	
42	Fort on Point Patience, Patuxent river, Md.	400	250,000	
43	Fort on Point Patience, Patuxent river, Md.	400	246,000	

Not projected; guns, cost, &c., conjectural.

at Gun^e, cost, &c., conjectural.

Work projected.

* Not projected; guns, cost, &c., conjectural.

5 Guns of Fort Sullivan, No. 1, A.

No. 1.—Of the fortifications constructed, constructing, &c.—Continued.

Classification.	Designation of the works.	Garrison in war.	ARMAMENT.															Total.	Expended.	Required to complete.	Total cost of repairs or construction.
			42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Carronades.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.	Corbels.				
4	Works in Portsmouth harbor, N. H.	750																150	300,000	*300,000	
5	Fort Pickering, Salem, Mass.	300																73	174,000	174,000	
6	Fort on Jack's Point, Marblehead, Mass.	350																88	144,000	144,000	
7	Works at Provincetown, Cape Cod, Mass.	1,000																900	600,000	*600,000	
8	Works at New Bedford, Mass.	1,750																150	300,000	*300,000	
9	Fort on Rose Island, Narragansett roads, R. I.	470																94	150,000	150,000	
10	Fort on Soler's Point flats, Md.	800																159	1,000,000	1,000,000	
11	Fort on Thomas's Point, Patuxent river, Md.	350																69	259,000	*259,000	
	Deduct garrison and guns of Nos. 4, 7, 8, and 15, of A.	6,080	108	494	400	23	29	32	92	126	12	6	35	10	5	16	1,327	3,425,000	3,425,000		
		980		8	23				9	6		3	6				55				
		5,740	108	416	377	23	29	32	92	126	12	3	29	10	5	16	1,372	3,425,000	3,425,000		
E.—Works to be commenced next after those in D.																					
1	Fort Preble, Portland harbor, Me.	300	8	15	18	4	4	6	10	6	9							78	155,000	155,000	
2	Works at Gloucester, Mass.	500	16	30	33				10	8		1	9					100	900,000	900,000	
3	Closing Broad Sound Pass, Boston harbor, Mass.																		210,000	210,000	
4	Works at Barnstable, Plymouth, Mass.	500																50	100,000	100,000	
5	Works at Stonington Point, Conn.	275																75	900,000	900,000	
6	Fort on Cedar Point, Potomac river, Md.	550																110	300,000	300,000	
7	Works at Georgetown harbor, S. C.	500																100	950,000	950,000	
8	Works in Port Royal roads, S. C.	550																110	300,000	300,000	
9	Works on Tybee Island, Savannah river, Ga.	100																93	196,000	196,000	
10	Works on Tybee Island, Savannah river, Ga.	550																110	900,000	900,000	
	Georgia.	3,947	24	109	720	16	34	39	70	62	6	4	14	8	1	4	756	9,035,000	9,035,000		

* Works to be last commenced.																			
1	Works in Esplanade harbor, Maine.....	950																100,000	\$100,000
2	Works in Machias harbor, Maine.....	950																100,000	100,000
3	Works on Mount Desert island, Maine.....	1,000																500,000	500,000
4	Works at 'Avalon', Maine.....	135																50,000	50,000
5	Works at St. George's bay, Maine.....																		
6	Works at Damariscotta, Maine.....	1,000																400,000	400,000
7	Works at Broad bay, Maine.....																		
8	Works at Sheepscot bay, Maine.....	150																135,000	135,000
9	Works in Hog island channel, Portland, Me.....																		
10	Works at the mouth of Saco river, Maine.....	150																75,000	75,000
11	Works at the mouth of Kennebec river, Me.....																		
12	Works at York, Maine.....																		
13	Works at Newburyport, Mass.....	950																100,000	100,000
14	Works at Beverly, Mass.....	135																50,000	50,000
15	Works at Nantuxet Head, Salem, Mass.....	180																51,000	51,000
16	Works at Fort Sewall, Marblehead, Mass.....	980																174,000	174,000
17	Fort and outworks at Nantuxet Head, Boston, Mass.....	1,700																1,030,000	1,030,000
18	Redoubt on Hog island, Boston harbor, Mass.....																		
19	Works at Nantuxet harbor, Mass.....																		
20	Works at Edgartown, Mass.....	625																250,000	250,000
21	Works at Falmouth, Mass.....																		
22	Works at Holmer's Hole, Mass.....																		
23	Works at Tarpuin cove, Mass.....																		
24	Works at Canonicut island, R. I.....	1,800																1,200,000	1,200,000
25	Closing west passage of Narragansett roads, R. I.....																		
26	Fort Griswold, New London, Conn.....	500																307,000	307,000
27	Works at the mouth of Connecticut river, Conn.....	250																186,000	186,000
28	Fort Hale, New Haven harbor, Conn.....	125																100,000	100,000
29	Fort Wooster, New Haven harbor, Conn.....	120																48,000	48,000
30	Works for harbors and towns between New Haven and New York.....	500																42,000	42,000
31	Works in Gardiner's bay, Long island sound, N. Y.....	750																200,000	200,000
32	Works in Sag Harbor, N. Y.....	250																400,000	400,000
33	Redoubt in advance of Fort Tompkins, Staten island, N. Y.....	1,336																100,000	100,000
34	Fort on Middle Ground shoal, Sandy Hook, N. Y.....	800																686,000	686,000
35	Fort on East Bank shoal, Sandy Hook, N. Y.....	1,760																52,000	52,000
36	Port at Delaware breakwater.....	1,185																1,681,412	1,681,412
37	Port opposite Fort Delaware, Del.....	760																600,000	600,000
38	Port on Elk river, Md.....	169																521,000	521,000
39	Port on Hawkins' Point, Md.....	800																50,000	50,000
40	Works at Annapolis harbor, Md.....	500																376,000	376,000
41	Fort on Point Patience, Patuxent river, Md.....	400																250,000	250,000
42																		246,000	246,000

* Not projected; guns, cont, &c., conjectural.

† Work projected.

‡ Guns, cont, &c., conjectural.

§ Guns of Fort Sullivan, No. 1, A.

No. 1.—Of the fortifications constructed, constructing, &c.—Continued.

Classification.	Designation of the works.	Garrison in war.	ARMAMENT.															Expended.	Required to complete.	Total cost of repairs or construction.	
			45-pounders.	33-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Carronades.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.	Colorms.				Total.
4	Works in Portsmouth harbor, N. H.	750		45	52	4	6	5	9	16	2		4	2	2	1	2	150	300,000	300,000	300,000
5	Fort Pickering, Salem, Mass.	300		16	21	2	3	6	11	7		1	4				2	73	174,000	174,000	174,000
6	Fort on Jack's Point, Marblehead, Mass.	350		33	50	2	2	3	7	2	1	4				1	4	88	144,000	144,000	144,000
7	Works at Provincetown, Cape Cod, Mass.	1,000	40	56	56	4	6	5	9	20	16	2	6	2	2	1	2	900	600,000	600,000	600,000
8	Works at New Bedford, Mass.	750		45	52	4	6	5	9	16	2		4	2	2	1	2	150	300,000	300,000	300,000
9	Fort on Rose Island, Narragansett roads, R. I.	470	30	37	21					12		1	3					94	150,000	150,000	150,000
10	Fort on Solers's Point, Md.	800	38	76	33					12								159	1,000,000	1,000,000	1,000,000
11	Fort on Thomas's Point, Patuxent river, Md.	350	20	25	2			3	6	2	1	2					2	69	259,000	259,000	259,000
	Deduct garrison and guns of Nos. 4, 7, 8, and 15, of A.	6,080	108	494	400	93	39	32	93	136	12	6	35	10	10	5	16	1,327	3,425,000	3,425,000	3,425,000
		280		8	23				9	6		3	6					55			
		5,740	108	416	377	23	39	23	93	130	12	3	39	10	10	5	16	1,373	3,425,000	3,425,000	3,425,000
E.—Works to be commenced next after those in D.																					
1	Fort Preble, Portland harbor, Me.	300	8	15	18	4	4	6	10	6	2					1	4	78	155,000	155,000	155,000
2	Works at Gloucester, Mass.	500	16	30	33				10	8		1	2					100	300,000	300,000	300,000
3	Closing Armed Bound Pass, Boston harbor, Mass.																	50	310,000	310,000	310,000
4	Works at Burnet Point, Plymouth, Mass.	500			33	4	4	3		4			2					50	110,000	110,000	110,000
5	Works at Stonington Point, Conn.	375		30	36		6	10					1	2				75	200,000	200,000	200,000
6	Fort on Cedar Point, Potomac river, Md.	550		34	50	2	4	6	10	8			2	2	2	2		110	300,000	300,000	300,000
7	Works at Georgetown harbor, S. C.	500		30	44	3	4	6	10	8			2	2	2	2		100	250,000	250,000	250,000
8	Works in Fort Royal roads, S. C.	550		30	50	3	4	6	10	8			1	2	2	2		110	300,000	300,000	300,000
9	Works at Fort Mifflin, Savannah river, Ga.	100		16				3		2								23	126,000	126,000	126,000
10	Works at Cumberland head, St. Mary's river, Georgia.	650		20	56	2	4	3	10	2	2		2					110	300,000	300,000	300,000
		3,946	24	103	780	11	34	29	70	22	6	4	12					756	2,035,000	2,035,000	2,035,000

E.—Works to be commenced next after those in D.

1 Fort Preble, Portland harbor, Me.

2 Works at Gloucester, Mass.

3 Closing Broad Sound Pass, Boston harbor, Mass.

4 Works at Garnet Point, Plymouth, Mass.

5 Works at Scituate Point, Conn.

6 Fort on Cedar Point, Potomac river, Md.

7 Works at Georgetown harbor, B. C.

8 Works in Port Royal roads, S. C.

9 Works on Tybee Island, Savannah river, Ga.

10 Works on Cumberland sound, St. Mary's river, Georgia.

p. — Works to be last commented.

No.	Description.	Length, in feet.	Width, in feet.	Depth, in feet.	Area, in acres.	Volume, in cubic feet.	Cost, in dollars.
1	Works in Eastport harbor, Maine	250	100	10	2,500	25,000	\$100,000
2	Works in Machias harbor, Maine	1,000	100	10	10,000	100,000	\$1,000,000
3	Works at Castine, Maine	1,000	100	10	10,000	100,000	\$1,000,000
4	Works at Castine, Maine	125	100	10	1,250	12,500	\$50,000
5	Works at St. George's bay, Maine	1,000	100	10	10,000	100,000	\$1,000,000
6	Works at Damascus, Maine	1,000	100	10	10,000	100,000	\$1,000,000
7	Works at Broad bay, Maine	1,000	100	10	10,000	100,000	\$1,000,000
8	Works at Sheepscot bay, Maine	1,000	100	10	10,000	100,000	\$1,000,000
9	Works in the mouth of Kennebec river, Me.	150	100	10	1,500	15,000	\$135,000
10	Works at the mouth of Kennebec river, Me.	150	100	10	1,500	15,000	\$135,000
11	Works at York, Maine	250	100	10	2,500	25,000	\$100,000
12	Works at Newburyport, Mass.	135	100	10	1,350	13,500	\$50,000
13	Works at Beverly, Mass.	180	100	10	1,800	18,000	\$51,000
14	Works at Nauset Head, Salem, Mass.	280	100	10	2,800	28,000	\$174,000
15	Works at Port Sewall, Marblehead, Mass.	1,700	100	10	17,000	170,000	\$1,090,000
16	Fort and outworks at Nantasket Head, Boston, Mass.	1,700	100	10	17,000	170,000	\$1,090,000
17	Redoubt on Hog island, Boston harbor, Mass.	1,700	100	10	17,000	170,000	\$1,090,000
18	Works at Nantucket harbor, Mass.	1,700	100	10	17,000	170,000	\$1,090,000
19	Works at Edgartown, Mass.	625	100	10	6,250	62,500	\$350,000
20	Works at Falmouth, Mass.	1,800	100	10	18,000	180,000	\$1,190,000
21	Works at Holyoke, Mass.	1,800	100	10	18,000	180,000	\$1,190,000
22	Works at Holyoke, Mass.	1,800	100	10	18,000	180,000	\$1,190,000
23	Works at Nantuxet cove, Mass.	1,800	100	10	18,000	180,000	\$1,190,000
24	Works at Nantuxet cove, Mass.	1,800	100	10	18,000	180,000	\$1,190,000
25	Closing west passage of Narragansett roads, R. I.	500	100	10	5,000	50,000	\$300,000
26	Fort Griswold, New London, Conn.	500	100	10	5,000	50,000	\$300,000
27	Works at the mouth of Connecticut river, Conn.	250	100	10	2,500	25,000	\$100,000
28	Fort Hale, New Haven harbor, Conn.	125	100	10	1,250	12,500	\$48,000
29	Fort Wooster, New Haven harbor, Conn.	125	100	10	1,250	12,500	\$48,000
30	Works for harbors and towns between New Haven and New York	500	100	10	5,000	50,000	\$300,000
31	Works in Gardiner's bay, Long Island sound, N. Y.	750	100	10	7,500	75,000	\$400,000
32	Works in Sag Harbor, N. Y.	950	100	10	9,500	95,000	\$500,000
33	Fort on Wilkins's Point, Long Island, N. Y.	1,325	100	10	13,250	132,500	\$685,000
34	Redoubt in advance of Fort Tompkins, Staten Island, N. Y.	800	100	10	8,000	80,000	\$420,000
35	Fort on Middle Ground shoal, Sandy Hook, N. J.	1,760	100	10	17,600	176,000	\$1,081,412
36	Fort on East Bank shoal, Sandy Hook, N. Y.	1,760	100	10	17,600	176,000	\$1,081,412
37	Fort at Delaware breakwater, Del.	1,760	100	10	17,600	176,000	\$1,081,412
38	Fort opposite Fort Delaware, Del.	1,760	100	10	17,600	176,000	\$1,081,412
39	Fort on Elk river, Md.	189	100	10	1,890	18,900	\$50,000
40	Fort on Hawkins's Point, Md.	800	100	10	8,000	80,000	\$376,000
41	Works at Annapolis harbor, Md.	500	100	10	5,000	50,000	\$250,000
42	Fort on Point Patience, Patuxent river, Md.	400	100	10	4,000	40,000	\$246,000

* Not projected; guns, cost, &c., conjectural.

Work projected.

t Gun^r, cost, &c., conjectural.

§ Guns of Fort Sullivan, No. 1, A.

No. 1.—Of the fortifications constructed, constructing, &c.—Continued.

Classification.	Designation of the works.	Garrison in war.	ARMAMENT.															Expended.	Required to complete.	Total cost of repairs or construction.
			42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Carronades.	8-inch howitzers, heavy.	13-inch mortars.	10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.	Cohorns.	Total.				
4	Works in Portsmouth harbor, N. H.	750														150	300,000	*300,000		
5	Fort Pickering, Salem, Mass.	300														73	174,000	174,000		
6	Fort on Jack's Point, Marblehead, Mass.	350														88	144,000	144,000		
7	Works at Provincetown, Cape Cod, Mass.	1,000														900	600,000	*600,000		
8	Works at New Bedford, Mass.	1,750														150	300,000	*300,000		
9	Fort on Rose Island, Narragansett roads, R. I.	470														94	150,000	150,000		
10	Fort on Soler's Point flats, Md.	800														159	1,000,000	1,000,000		
11	Fort on Thomas's Point, Patuxent river, Md.	350														69	259,000	*259,000		
	Deduct garrison and guns of Nos. 4, 7, 8, and 15, of A.	6,080	108	484	400	22	29	32	92	126	12	6	35	10	5	16	1,327	3,425,000		
				8	23				9		6		3	6			55	3,425,000		
		5,740	108	416	377	22	29	23	92	120	12	3	29	10	5	16	1,372	3,425,000		
E.—Works to be commenced next after those in D.																				
1	Fort Probie, Portland harbor, Me.	300	8	15	18	4	4	6	10	6	2					1	4	78	155,000	
2	Works at Gloucester, Mass.	500	16	30	33				10	8		1	9					100	900,000	
3	Closing Broad Sound Pass, Boston harbor, Mass.																	910,000	910,000	
4	Works at Garnet Point, Plymouth, Mass.	500																50	100,000	
5	Works at Scituate Point, Conn.	375																75	900,000	
6	Fort on Cedar Point, Potomac river, Md.	550																110	900,000	
7	Works at Georgetown harbor, S. C.	600																100	950,000	
8	Works in Port Royal roads, S. C.	550																110	300,000	
9	Works on Tybee Island, Savannah river, Ga.	100																93	196,000	
10	Works at Cumberland sound, St. Mary's river, Georgia.	550																110	900,000	
		3,945	24	107	280	111	34	39	70	52	6	4	19					756	9,015,000	

* Works to be last commenced.																			
1	Works in Eastport harbor, Maine.....	950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Works in Machina harbor, Maine.....	950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	Works on Mount Desert island, Maine.....	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	Works at Castine, Maine.....	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	Works at St. George's bay, Maine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	Works at Damariscotta, Maine.....	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	Works at Broad bay, Maine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	Works at Sheepscot bay, Maine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	Works in Hog Island channel, Portland, Me.....	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	Works at the mouth of Saco river, Maine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	Works at the mouth of Kennebec river, Me.....	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	Works at York, Maine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Works at Newburyport, Mass.....	950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	Works at Beverly, Mass.....	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Works at Naugatuck Head, Salem, Mass.....	180	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	Works at Port Sewall, Marblehead, Mass.....	280	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	Fort and outworks at Nantasket Head, Boston, Mass.....	1,700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	Redoubt on Hog island, Boston harbor, Mass.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	Works at Nantucket harbor, Mass.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	Works at Edgartown, Mass.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	Works at Edgartown, Mass.....	625	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	Works at Palmer's Hole, Mass.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	Works at Turpentine cove, R. I.....	1,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	Closing west passage of Narragansett roads, R. I.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	Fort Griswold, New London, Conn.....	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	Works at the mouth of Connecticut river, Conn.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	Fort Hale, New Haven harbor, Conn.....	250	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	Fort Wooster, New Haven harbor, Conn.....	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	Works for harbors and towns between New Haven and New York.....	130	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	Works in Gardiner's bay, Long Island sound, N. Y.....	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	Works in Sag Harbor, N. Y.....	750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	Works in Wilkins's Point, Long Island, N. Y.....	250	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33	Redoubt in advance of Fort Tompkins, Staten Island, N. Y.....	1,335	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	Fort on Middle Ground shoal, Sandy Hook, N. Y.....	800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	Fort on East Bank shoal, Sandy Hook, N. Y.....	1,760	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	Fort at Delaware breakwater.....	1,195	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37	Fort opposite Fort Delaware, Del.....	760	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	Fort on Elk river, Md.....	169	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	Fort on Hawkins's Point, Md.....	800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	Works at Annapolis harbor, Md.....	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
41	Fort on Point Patience, Patuxent river, Md.....	400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Not projected; guns, cost, &c., conjectural.

† Work projected.

‡ Guns, cost, &c., conjectural.

§ Guns of Fort Sullivan, No. 1, A.

No. 1.—Of the fortifications constructed, constructing, &c.—Continued.

Classification.	Designation of the works.	ARMAMENT.															Total.	Expended.	Required to complete.	Total cost of repairs or construction.
		42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Carronades.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.	Colours.				
4	Works in Portsmouth harbor, N. H. ....	.....	45	52	4	6	5	9	16	2	...	4	2	2	1	2	150	300,000	
5	Fort Pickering, Salem, Mass. ....	.....	16	31	2	3	3	6	11	7	...	1	4	...	...	2	73	174,000
6	Fort on Jack's Point, Marblehead, Mass. ....	.....	33	30	2	3	3	10	7	2	1	4	...	...	1	4	88	144,000
7	Works at Provincetown, Cape Cod, Mass.	1,000	40	56	56	56	20	16	9	2	6	4	...	...	...	...	900	600,000
8	Works at New Bedford, Mass.	1,750	45	52	4	6	5	9	16	2	...	4	2	2	1	2	150	300,000		
9	Fort on Rose Island, Narragansett roads, R. I.	470	30	37	21	...	...	...	12	...	1	3	...	...	...	...	94	150,000
10	Fort on Soler's Point flats, Md.	800	38	76	33	...	...	...	12	...	...	...	...	...	...	...	159	1,000,000
11	Fort on Thomas's Point, Patuxent river, Md.	350	20	35	9	...	3	6	6	9	1	9	...	...	...	2	69	259,000
	Deduct garrison and guns of Nos. 4, 7, 8, and 15, of A.	6,030	494	400	92	99	32	93	126	12	6	35	10	10	5	16	1,327	3,425,000		
		280	8	23	...	...	9	...	6	...	3	6	...	...	...	...	55	.....	
		5,740	108	377	92	99	93	92	120	12	3	29	10	10	5	16	1,372	3,425,000		
E.—Works to be commenced next after those in D.																				
1	Fort Preble, Portland harbor, Me.	300	8	15	4	4	6	10	6	9	...	...	...	...	1	4	78	155,000
2	Works at Gloucester, Mass.	500	16	30	33	...	...	10	8	...	1	9	...	...	...	...	100	900,000
3	Cineoing Broad Sound Pass, Boston harbor, Mass. ....	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	910,000
4	Works at Garnett Point, Plymouth, Mass.	500	...	33	4	4	3	...	4	...	...	9	...	...	...	...	50	100,000
5	Works at Sennett Point, Conn.	375	20	36	4	6	10	8	...	...	1	3	...	...	...	...	75	900,000
6	Fort on Cedar Point, Potomac river, Md.	550	94	50	2	4	6	10	8	9	...	3	...	9	...	...	110	300,000
7	Works at Georgetown harbor, S. C.	600	90	44	4	6	10	8	9	...	1	3	...	9	...	...	100	950,000
8	Works in Fort Royal roads, S. C.	550	94	50	2	4	6	10	8	...	...	9	...	9	...	...	110	300,000
9	Works on Tybee Island, Savannah river, Ga.	100	16	...	...	...	3	...	9	...	...	9	...	...	...	...	93	196,000
10	Works at Cumberland sound, St. Mary's river, Georgia.	550	90	56	9	4	3	10	8	9	...	3	...	9	...	...	110	900,000
		3,947	24	701	111	34	10	70	53	6	4	14	...	8	1	4	756	9,035,000		
																		3,425,000		

No.		Work	Estimated cost, &c.	Actual cost, &c.	Remarks
1	250	Works in Eastport harbor, Maine	250	100,000	
2	250	Works in Machias harbor, Maine	250	100,000	
3	1,000	Works on Mount Desert island, Maine	1,000	500,000	
4	125	Works at Castine, Maine	125	50,000	
5	1,000	Works at St. George's bay, Maine	1,000	400,000	
6	1,000	Works at Bangor, Maine	1,000	135,000	
7	150	Works at Broad bay, Maine	150	75,000	
8	150	Works at Sheepscot bay, Maine	150	100,000	
9	150	Works in Hog Island channel, Portland, Me.	150	50,000	
10	150	Works at the mouth of Kennebec river, Me.	150	50,000	
11	150	Works at York, Maine	150	50,000	
12	150	Works at Newburyport, Mass.	150	50,000	
13	125	Works at Beverly, Mass.	125	50,000	
14	180	Works at Nahant, Mass.	180	50,000	
15	250	Works at Nantuxet Head, Boston, Mass.	250	174,000	
16	1,700	Works at Fort Sewall, Marblehead, Mass.	1,700	1,020,000	
17	1,700	Fort and outworks at Nantuxet Head, Boston, Mass.	1,700	250,000	
18	625	Redoubt on Hog Island, Boston harbor, Mass.	625	1,300,000	
19	625	Works at Nantuxet harbor, Mass.	625	307,000	
20	625	Works at Edgartown, Mass.	625	198,000	
21	625	Works at Edgartown, Mass.	625	100,000	
22	1,800	Works at Thomas's Hook, Mass.	1,800	48,000	
23	1,800	Works at Torpedillo cove, Mass.	1,800	43,000	
24	1,800	Works at Cascoque island, Me.	1,800	900,000	
25	500	Closing wear passage of Narragansett road, R. I.	500	400,000	
26	500	Fort Griswold, New London, Conn.	500	400,000	
27	950	Works at the mouth of Connecticut river, Conn.	950	100,000	
28	195	Fort Halse, New Haven harbor, Conn.	195	145,000	
29	190	Fort Wood, New Haven harbor, Conn.	190	43,000	
30	500	Works for harbor and towns between New Haven and New York	500	300,000	
31	750	Works in Gardiner's bay, Long Island sound, N. Y.	750	400,000	
32	950	Works in Sag Harbor, N. Y.	950	100,000	
33	1,336	Fort on Wilkins's Point, Long Island, N. Y.	1,336	686,000	
34	800	Redoubt in advance of Fort Tompkins, Staten island, N. Y.	800	52,000	
35	1,760	Fort on Middle Ground shoal, Sandy Hook, N. Y.	1,760	1,681,412	
36	1,760	Fort on East Bank shoal, Sandy Hook, N. Y.	1,760	1,681,412	
37	1,125	Fort at Delaware breakwater	1,125	600,000	
38	169	Fort opposite Fort Delaware, Del.	169	521,000	
39	800	Fort on Elk river, Md.	800	50,000	
40	800	Fort on Hawkins's Point, Md.	800	378,000	
41	500	Works at Annapolis harbor, Md.	500	250,000	
42	400	Fort on Point Patience, Patuxent river, Md.	400	346,000	

* Not projected; guns, cost, &c., conjectural.
† Work projected.
‡ Guns, cost, &c., conjectural.
§ Guns of Fort Sullivan, No. 1, A.

* Not projected; guns, cost, &c., conjectural.

Work projected.

† Gun^r, cost, &c., conjectural.

6 Guns of Fort Sullivan, No. 1, A.

No. 1.—Of the fortifications constructed, constructing, &c.—Continued.

Classification.	Designation of the works.	Garrison in war.	ARMAMENT.											Expended.	Required to complete.	Total cost of repairs or construction.				
			42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Cannonades.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.				10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.	Cohorns.	Total.
43	Works at St. Mary's, Potomac river, Md.	550	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	110	.....	300,000
44	Works at Bald Head, Cape Fear river, N. C.	450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	87	.....	120,000
45	Works at Federal Point, Cape Fear river, N. C.	200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	.....	18,000
46	Works at the mouth of Santee river, S. C.	250	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50	.....	100,000
47	Works at Bull's bay and other inlets, S. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
48	Works at Edisto sound, S. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
49	Works at North Edisto sound, S. C.	375	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75	.....	150,000
50	Works at South Edisto sound, S. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
51	Works at St. Helena sound, S. C.	375	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75	.....	150,000
52	Works at Wassaw sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
53	Works at Ogeechee sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
54	Works at St. Catherine's sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
55	Works at Sapelo sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
56	Works at Dolly inlet, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
57	Works at Altamaha sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
58	Works at St. Simon's sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
59	Works at St. Andrew's sound, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Deduct garrison and guns of Nos. 9, 10, and 18, of A.	95,740	574	1,360	1,366	86	109	142	402	401	33	46	145	17	53	12	73	4,828	.....	14,341,824
		195	.....	8	24	.....	.....	3	.....	9	.....	.....	2	.....	.....	.....	.....	39	.....	.....
		95,545	574	1,362	1,342	86	109	139	402	399	33	46	143	17	53	12	73	4,700	.....	14,341,824

RECAPITULATION.

A. Old forts and batteries	5,445	168	958	343	5	14	57	34	114	....	97	64	....	..	..	..	3	1,097	609,319	1,937,918	1,937,937
B. New fortifications completed.....	1,770	36	634	519	59	11	23	137	187	50	15	49	..	4	8	86	7	9,339	1,601,144	0,795,539	1,601,144
C. Fortifications under construction.....	11,740	354	690	510	59	64	33	934	166	90	19	49	18	8	68	..	9,397	7,431,911	9,794,649	10,810,789	
D. Fortifications to be first commenced	5,740	108	416	377	52	59	9	93	180	19	3	99	10	5	16	14	1,879	....	9,035,090	9,435,560	
E. Fortifications to be next constructed	3,935	94	169	390	16	34	39	70	53	6	4	19	10	4	1	4	14	1,758	....	9,035,090	9,435,000
F. Fortifications to be last commenced	95,545	574	1,368	1,342	96	109	139	402	399	33	46	143	17	33	13	73	73	4,780	....	14,941,694	14,941,694
	54,965	1,966	2,979	2,991	180	251	305	894	878	71	101	312	39	73	37	161	10,538	9,792,374	83,718,591	33,440,985	

* Guns, cost, &c., conjectural.

† Work projected.

For the board

JOS. G. TOTTEN, Colonel Engineer.

WASHINGTON, April 23, 1940.

Estimated cost of ordnance for the armament of fortifications, agreeably to statement 1, embracing cannon mounted, and 100 rounds of ammunition for each piece.

Fortifications.	Ordnance.	CANNON.												Whole number of cannon.
		48-pound guns.	32-pound guns.	24-pound guns.	18-pound guns.	12-pound guns.	Field guns.	Cartridges.	8 inch siege howitzers.	13-inch mortars.	10-inch light mortars.	8-inch light mortars.	16-inch stone mortars.	Cobornes.
Old forts and batteries.—Table A.....	Required.....	168	968	343	5	14	57	34	114	27	61	.....	.....	3
	On hand.....	164	268	313	5	14	57	.....	21	.....	19	.....	.....	.....
New fortifications completed.—Table B.	To be provided.....	.....	.....	.....	.....	.....	.....	34	93	27	45	.....	.....	8
	Required.....	34	54	98	9	11	14	62	27	2	8	4	1	7
Fortifications under construction.—Table C.	To be provided.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Required.....	13	54	59	9	11	14	.....	.....	.....	.....	4	.....	.....
Fortifications to be first commenced.—Table D.	To be provided.....	.....	.....	.....	.....	.....	.....	62	27	2	8	.....	1	7
	Required.....	354	690	510	52	61	33	234	166	20	19	18	8	58
Fortifications to be next constructed.—Table E.	To be provided.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Required.....	108	416	377	22	29	23	92	120	12	3	10	5	16
Fortifications to be last constructed.—Table F.	To be provided.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Required.....	198	.....	84	.....	29	.....	92	120	12	3	10	5	16
Grand total required.....	Required.....	24	169	320	16	24	39	70	52	6	4	19	8	4
	On hand.....	.....	8	.....	16	.....	30	.....	.....	.....	.....	.....	1	.....
Grand total to be provided.....	To be provided.....	24	161	320	.....	24	.....	70	.....	6	4	19	8	4
	Required from A to E.....	692	1,597	1,649	104	142	166	492	479	38	55	169	22	88
Grand total required.....	Required.....	574	1,382	1,349	86	109	139	402	399	33	46	143	17	73
	On hand.....	.....	.....	.....	86	.....	139	.....	.....	.....	.....	.....	.....	.....
Grand total to be provided.....	To be provided.....	574	1,362	1,342	.....	109	.....	402	399	33	46	143	17	73
	Grand total required.....	1,366	2,979	2,991	196	251	305	891	878	71	101	319	39	181
Grand total on hand.....	Grand total on hand.....	181	1,438	1,245	150	67	305	...	21	.....	19	7	.....	.....
	Grand total to be provided.....	1,085	1,541	1,746	.....	184	.....	891	857	71	101	300	96	181

Estimated cost of ordnance of all kinds required for the armament of fortifications, &c.—Continued.

Fortifications.	Ordnance.	CARRIAGES FOR—														
		42-pound guns.	32-pound guns.	24-pound guns.	18-pound guns.	12-pound guns.	Field guns.	Cannonades.	8 inch sea-coast howitzers.	8 inch siege howitzers.	13 inch mortars.	10-inch heavy mortars.	10-inch light mortars.	8-inch light mortars.	Stone mortars.	Cohorns.
Old forts and batteries.—Table A.....	Required	168	268	343	5	14	57	34	114	.....	27	64	.....	.....	.....	3
	On hand.....	50	228	343	.....	.....	57	.....	.....	.....	.....	.....	.....	.....	.....	.....
New fortifications completed.—Table B.	To be provided	116	.....	.....	5	14	.....	34	114	.....	27	64	.....	.....	.....	3
	Required	38	54	99	9	11	14	62	27	.....	2	8	.....	4	1	7
Fortifications under construction.—Table C. .	To be provided	38	.....	.....	9	11	.....	62	27	.....	2	8	.....	4	1	7
	Required	354	680	510	52	64	33	204	166	20	19	49	12	18	8	58
Fortifications to be first commenced.—Table D	To be provided	354	466	477	52	64	.....	204	166	20	19	49	12	18	8	58
	Required	108	416	377	22	29	23	92	120	12	3	29	10	10	5	16
Fortifications to be next constructed.—Table E.	To be provided	108	416	377	22	29	.....	92	120	12	3	29	10	10	5	16
	Required	24	169	320	16	24	20	70	52	6	4	19	.....	8	1	4
Fortifications to be last constructed.—Table F.	To be provided	21	169	320	16	24	.....	70	52	6	4	19	.....	8	1	4
	Required from A to E.....	692	1,597	1,648	104	142	166	492	479	38	53	169	22	40	15	88
Fortifications to be last constructed.—Table F.	Required	574	1,362	1,342	86	109	139	402	399	33	46	143	17	33	12	73
	On hand .....	.....	.....	.....	.....	.....	139	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fortifications to be last constructed.—Table F.	To be provided	574	1,362	1,342	86	109	.....	402	399	33	46	143	17	33	12	73
	Grand total required	1,266	2,979	2,191	190	251	205	891	878	71	101	312	39	73	27	161
Fortifications to be last constructed.—Table F.	Grand total on hand	50	546	475	.....	.....	305	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Grand total to be provided	1,216	2,433	2,516	190	251	.....	894	878	71	101	312	39	73	27	161

Estimated cost of ordnance of all kinds required for the armament of fortifications, &c.—Continued.

Fortifications.	Ordnance.	PROJECTILES.										CANNON POWDER.	
		42-pound shot.	32-pound shot.	24-pound shot.	18-pound shot.	12-pound shot.	Shot for field-guns.	24 pound-shell.	8-inch shells.	13-inch shells.	10-inch shells.	Charges for stone mortars.	Pounds.
Old forts and batteries.—Table A.	Required	16,800	96,800	34,300	500	1,400	5,700	3,700	11,400	2,700	6,400	.....	878,800
	On hand.....	13,835	26,800	34,300	500	1,400	5,700	3,700	6,130	6,400	6,400	.....	878,800
New fortifications completed.—Table B.	To be provided.....	2,965	.....	.....	.....	.....	.....	.....	5,280	2,700	.....	.....	.....
	Required	3,840	5,400	9,900	900	1,100	1,400	6,940	3,100	200	800	100	205,800
Fortifications under construction.—Table C.	On hand.....	.....	5,400	9,900	900	1,100	1,400	5,348	.....	.....	800	.....	60,170
	To be provided.....	3,800	.....	.....	.....	.....	.....	1,552	3,100	2.0	.....	100	144,630
Fortifications to be first commenced.—Table D.	Required	35,400	69,000	51,000	5,300	6,400	3,300	98,200	20,400	1,900	6,100	800	1,616,300
	On hand.....	.....	69,000	32,000	5,900	6,400	3,300	.....	.....	.....	6,100	.....	.....
Fortifications to be next constructed.—Table E.	To be provided.....	35,400	.....	19,000	.....	.....	.....	39,300	20,400	1,900	.....	800	1,616,300
	Required	10,800	41,600	37,700	2,900	2,900	2,300	10,800	14,900	300	3,900	500	874,300
Fortifications to be last constructed.—Table F.	On hand.....	.....	11,020	.....	2,900	2,900	2,300	.....	.....	.....	3,900	.....	.....
	To be provided.....	10,800	30,580	37,700	.....	.....	.....	10,800	14,900	300	.....	500	874,300
	Required	9,400	16,800	32,000	1,600	2,400	3,900	7,400	6,600	400	1,900	100	471,300
	On hand.....	.....	.....	.....	1,600	2,400	3,900	.....	.....	.....	54	.....	.....
	To be provided.....	2,400	16,800	32,000	.....	.....	.....	7,400	6,600	400	1,846	100	481,300
	Required from A to E.....	69,300	156,700	164,900	10,400	14,200	16,600	58,000	55,700	5,500	19,100	1,500	4,046,500
	Required	57,400	134,900	134,300	8,600	10,900	13,900	47,500	46,500	4,600	16,000	1,300	3,385,750
	On hand.....	.....	.....	.....	8,600	10,900	13,900	.....	.....	.....	.....	.....	.....
	To be provided.....	57,400	134,900	131,200	.....	.....	.....	47,500	46,500	4,600	16,000	1,200	3,385,750
	Grand total required.....	131,600	297,900	296,100	19,000	25,100	30,500	105,500	102,200	10,100	35,100	2,700	7,433,250
	Grand total on hand.....	13,835	112,200	76,200	19,000	25,100	30,500	9,044	6,130	.....	17,254	.....	938,970
	Grand total to be provided.....	117,765	185,700	222,900	.....	.....	.....	96,456	96,070	10,100	17,846	2,700	6,494,280

Estimated cost of ordnance of all kinds required for the armament of fortifications, &c.—Continued.

Fortifications.	Ordnance.	COST OF ARMAMENT.				
		Cannon.	Carriages.	Projectiles.	Powder.	Total amount.
Old forts and batteries.— Table A.	Required	\$402,935 00	\$361,935 00	\$203,340 00	\$175,760 00	\$1,144,970 00
	On hand	338,115 00	242,375 00	151,783 40	175,760 00	908,032 40
	To be provided	65,820 00	119,560 00	51,557 60	.....	236,937 60
New fortifications com- pleted.—Table B.	Required	105,065 00	105,455 00	47,283 00	41,160 00	298,963 00
	On hand	69,105 00	55,275 00	28,454 00	12,034 00	164,869 00
	To be provided	35,960 00	50,180 00	18,829 00	29,126 00	134,095 00
Fortifications under con- struction.—Table C.	Required	816,770 00	739,590 00	351,484 00	323,260 00	2,231,104 00
	On hand	502,360 00	99,025 00	164,284 00	.....	765,669 00
	To be provided	314,410 00	640,565 00	187,200 00	323,260 00	1,465,435 00
Fortifications to be first commenced.—Table D.	Required	451,405 00	411,685 00	128,547 00	174,860 00	1,226,497 00
	On hand	390,925 00	6,900 00	39,560 40	.....	337,385 40
	To be provided	60,480 00	404,785 00	148,986 60	174,860 00	889,111 60
Fortifications to be next constructed.—Table E.	Required	243,410 00	240,329 00	102,333 00	94,260 00	680,332 00
	On hand	11,500 00	11,700 00	4,203 60	.....	27,403 60
	To be provided	231,910 00	228,629 00	98,129 40	94,260 00	652,919 40
Fortifications to be last constructed.—Table F.	Required from A to E.	2,030,585 00	1,858,985 00	892,987 00	809,300 00	5,591,857 00
	Required	1,692,110 00	1,551,500 00	746,770 00	677,750 00	4,668,130 00
	On hand	35,400 00	41,700 00	17,202 00	.....	94,302 00
	To be provided	1,656,710 00	1,509,800 00	729,568 00	677,750 00	4,573,828 00
	Grand total req'd	3,712,695 00	3,410,475 00	1,639,757 00	1,487,050 00	10,249,987 00
	Grand total on hand	1,247,405 00	456,975 00	405,486 40	187,794 00	2,297,660 40
	Grand total to be provided.	2,465,290 00	2,953,510 00	1,234,270 60	1,299,256 00	7,952,326 60

NOTE.—The cost of saltpetre and brimstone may be estimated at one-half of the cost of gunpowder.

ORDNANCE OFFICE, Washington, January 16, 1840.

No. 2.—Of the fortifications constructed, constructing, or repairing, and of those proposed to be constructed or repaired for the defence of the Gulf frontier, from Cape Florida to the Sabine bay.

Classification.	Designation of the works.	Garrison in war.	ARMAMENT.													Expended.	Required to complete.	Total cost of repairs or construction.			
			42-pounds.	32-pounds.	24-pounds.	18-pounds.	12-pounds.	Field-pieces.	Carronades.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.				16-inch stone mortars.	Cohorns.	Total.
A.—Old works repaired and those proposed to be repaired, with the amounts expended, and the amounts required to put them in a serviceable condition.																					
1	Fort Barrancas, Pensacola, Fla.	950	.....	11	10	5	3	3	8	4	.....	.....	2	.....	1	..	2	49	\$75,000	\$100,000	\$175,000
2	Fort St. Philip, Mississippi, La.	100	.....	.....	16	.....	.....	.....	4	4	.....	.....	.....	.....	.....	.....	.....	20	.....	3,300	3,300
3	Fort Pickens, Pensacola harbor, Fla.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,000	8,000
4	Fort Morgan, Mobile Point, Ala.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,000	10,000
5	Fort Pike, Rigollets, La.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,000	5,000
6	Fort Wood, Chef Menteur, La.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,500	3,500
7	Battery Bienvenue, La.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,500	2,500
8	Tower at Bayou Dupré, La.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	400	400
9	Fort Jackson, Mississippi river, La.	350	.....	11	36	5	3	3	8	6	.....	.....	2	.....	1	.....	2	69	75,000	152,780	227,780
B.—New works completed.																					
1	Fort Pickens, Pensacola, Fla.	1,260	63	17	49	5	13	6	36	13	.....	1	4	4	4	2	5	312	677,000	.....	677,000
2	Fort Morgan, Mobile Point, Ala.	700	14	.....	53	3	4	6	56	10	.....	2	4	2	2	.....	6	132	1,026,777	.....	1,026,777
3	Fort Pike, Rigollets, La.	200	.....	.....	36	.....	6	.....	9	5	.....	.....	1	.....	.....	.....	49	314,597	.....	314,597	
4	Fort Wood, Chef Menteur, La.	300	.....	.....	26	3	6	3	9	5	.....	.....	1	.....	.....	.....	52	378,642	.....	378,642	
5	Battery Bienvenue, La.	100	.....	.....	8	.....	.....	.....	10	2	.....	.....	1	.....	.....	.....	13	96,447	.....	96,447	
6	Tower at Bayou Dupré, La.	50	.....	.....	49	.....	7	.....	10	5	.....	1	2	.....	.....	.....	7	16,677	.....	16,677	
7	Fort Jackson, Mississippi river, La.	350	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67	638,766	.....	638,766
		3,000	77	17	311	11	36	12	80	43	.....	4	13	6	6	4	10	532	2,142,906	.....	2,142,906

G.—Works under construction.																		
1	Fort on Foster's bank, Pensacola, Fla.....	650	94	94	66	3	3	10	120	392,648	14,000	318,648						
2	Fort Livingston, Barrataria island, La.....	300			86	6	3	9	50	75,000	245,000	400,000						
3	Fort Livingston, Barrataria island, La.....	950	94	94	94	6	6	9	181	377,648	359,000	716,648						
E.—Works to be constructed after those in D of statement 1 are completed.																		
1	Tower at Pass-au-Heron, Mobile bay, Ala.....	60			6	2	2	2	12		25,000	125,000						
F.—Works to be last commenced.																		
1	Works at Key West or Tortugas, Fla.....	2,500							500		3,000,000	3,000,000						
2	Works at Charlotte harbor, Fla.....																	
3	Works at Espiritu Santo bay, Fla.....																	
4	Works at Appalacheicola bay, Fla.....	1,950							250		1,000,000	11,000,000						
5	Works at Appalacheicola bay, Fla.....																	
6	Works at St. Joseph's bay, Fla.....																	
7	Works at Santa Rosa bay, Fla.....	100									900,000	900,000						
8	Works to cover navy yard at Pensacola, Fla.....	400							50		200,000	200,000						
9	Works at Perdido bay, Ala.....	900							126		890,000	890,000						
10	Fort at Dauphin island, Mobile bay, Ala.....																	
		5,150	118	61	394	31	59	113	78	5	21	7	8	5	14	928	5,920,000	5,920,000

RECAPITULATION.

A.	Old forts and batteries.....	350		11	26	5	3	3	8	8		2	1	2	69	75,000	152,790	927,790
B.	New fortifications completed.....	3,060	77	17	211	11	39	12	80	42	4	13	6	4	532	3,118,906	3,118,906	3,118,906
C.	Fortifications under construction.....	950	24	94	91		6	6	9	15		3			181	377,648	359,000	716,648
D.	Works to be constructed after those in D of statement 1, are completed.....	60			6	2	2	2	2	2		2			12		25,000	25,000
E.	Works to be last commenced.....	5,150	118	61	394	31	59	113	78	5	21	7	8	5	14	938	5,290,000	5,290,000
		9,570	219	113	731	39	108	46	210	145	9	39	13	15	9	1,722	3,601,554	9,398,324

* Included in B.

† Work projected.

‡ Guns, cost, &c, conjectural.

For the board.

JOS. G. TUTTEN, Colonel Engineers.

WASHINGTON, April 23, 1870.



Estimated cost of ordnance required for the armament of fortifications, agreeably to statement 2, embracing cannon mounted, and 100 rounds of ammunition for each piece.

Fortifications.	Ordnance.	CANNON.														
		42-pounder guns.	32-pounder guns.	24-pounder guns.	18-pounder guns.	12-pounder guns.	Field guns.	Carronades.	8-inch sea-coast howitzers.	8-inch siege howitzers.	13-inch mortars.	10-inch heavy mortars.	10-inch light mortars.	8-inch light mortars.	16-inch stone mortars.	
Old forts and batteries.—Table A.....	Required.....	.....	11	58	5	3	3	8	8	.....	.....	2	.....	1	.....
	On hand.....	.....	11	96	5	3	3	.....	.....	.....	.....	.....	.....	.....	.....
New fortifications completed.—Table B.....	To be provided.....	.....	.....	.....	.....	.....	.....	8	8	.....	.....	2	.....	1	.....
	Required.....	77	17	211	11	39	13	80	42	.....	4	13	6	6	4
Fortifications under construction.—Table C.....	On hand.....	28	17	211	11	39	13	.....	.....	.....	.....	.....	.....	.....	.....
	To be provided.....	49	.....	.....	.....	.....	.....	80	42	.....	4	13	6	6	4
Works to be constructed after those in table D, statement 1, are completed.—Table E.	Required.....	24	24	94	.....	6	6	9	15	.....	.....	3	.....	.....	.....
	On hand.....	.....	24	94	.....	6	6	.....	.....	.....	.....	.....	.....	.....	.....
Works to be last commenced.—Table F.....	To be provided.....	24	.....	.....	.....	.....	.....	9	15	.....	.....	3	.....	.....	.....
	Required.....	.....	.....	6	2	2	.....	.....	2	.....	.....	.....	.....	.....	.....
Grand total required.....	On hand.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	To be provided.....	.....	.....	6	.....	2	.....	.....	2	.....	.....	.....	.....	.....	.....
Grand total on hand.....	Required from A to E.....	101	52	337	18	50	21	97	67	.....	4	18	6	7	4
	Grand total required.....	118	61	394	21	58	25	113	76	.....	5	21	7	8	5
Grand total to be provided.....	On hand.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	To be provided.....	118	61	394	.....	58	.....	113	76	.....	5	21	7	8	5
Grand total on hand.....	Grand total required.....	219	113	731	38	108	46	210	145	.....	9	39	13	15	9
	Grand total on hand.....	28	84	331	38	48	46	.....	.....	.....	.....	.....	.....	.....	.....
Grand total to be provided.....	Grand total to be provided.....	191	61	400	.....	60	.....	210	145	.....	9	39	13	15	9
	Grand total on hand.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Estimated cost of ordnance of all kinds required for the armament of fortifications, &c.—Continued.

Fortifications.	Ordnance.	CANNON.		CARRIAGES FOR—											
		Cohorns.	Whole number of cannon.	49-pounder guns.	32-pounder guns.	24-pounder guns.	16-pounder guns.	12-pounder guns.	Field guns.	Carriages.	8-inch sea-coast howitzers.	8-inch rifle howitzers.	13-inch mortars.	10-inch heavy mortars.	10-inch light mortars.
Old forts and batteries.—Table A.	Required	2	69	.....	11	98	5	3	3	8	8	.....	.....	2	.....
	On hand		48	.....	11	96	.....	.....	.....	3	.....	.....	.....	.....	.....
New fortifications completed.—Table B.	To be provided	2	21	.....	.....	.....	5	3	.....	8	8	.....	.....	2	.....
	Required	10	532	77	17	211	11	39	12	60	42	.....	4	13	6
Fortifications under construction.—Table C.	On hand .....	.....	318	17	.....	211	.....	.....	12	.....	.....	.....	.....	.....	.....
	To be provided	10	214	77	.....	.....	11	39	.....	60	42	.....	4	13	6
Works to be constructed after those in table D, statement 1, are completed.—Table E.	Required .....	.....	181	34	94	94	.....	6	6	9	15	.....	.....	3	.....
	On hand .....	.....	130	7	.....	6	.....	.....	.....	6	.....	.....	.....	.....	.....
Works to be last commenced.—Table F.	To be provided .....	.....	51	34	17	18	.....	6	.....	9	15	.....	.....	3	.....
	Required .....	.....	12	.....	.....	6	2	2	.....	.....	2	.....	.....	.....	.....
Works to be last commenced.—Table F.	On hand .....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	To be provided .....	.....	10	.....	.....	6	2	2	.....	.....	2	.....	.....	.....	.....
Works to be last commenced.—Table F.	Required from A to E.....	12	794	101	52	337	18	50	21	97	67	.....	4	18	6
	Required	14	928	118	61	394	21	58	25	113	78	.....	5	21	7
Works to be last commenced.—Table F.	On hand .....	.....	46	.....	.....	.....	.....	.....	25	.....	.....	.....	.....	.....	.....
	To be provided	14	883	118	61	394	21	58	.....	113	78	.....	5	21	7
Works to be last commenced.—Table F.	Grand total required	26	1,732	219	113	731	39	108	46	210	145	.....	9	39	13
	Grand total on hand .....	.....	544	.....	35	943	.....	.....	46	.....	.....	.....	.....	.....	.....
Works to be last commenced.—Table F.	Grand total to be provided.....	26	1,178	219	78	488	39	108	.....	210	145	.....	9	39	13

Estimated cost of ordnance of all kinds required for the armament of fortifications, &c.—Continued.

Fortifications.	Ordnance.	CARRIAGES FOR—			PROJECTILES.								
		8-inch light mortars.	Stone mortars.	Cohorns.	42-pounder shot.	32-pounder shot.	24-pounder shot.	18-pounder shot.	12-pounder shot.	Shot for field guns.	24-pounder shells.	8-inch shells.	13-inch shells.
Old forts and batteries.—Table A	Required	1	.....	2	.....	1,100	2,600	500	300	300	1,000	900	.....
	On hand.....	.....	.....	.....	.....	1,100	2,600	500	300	300	1,000	900	.....
New fortifications completed.—Table B	To be provided	1	.....	2	.....	.....	.....	.....	.....	.....	.....	900	.....
	Required	6	4	10	7,700	1,700	21,100	1,100	3,900	1,200	9,000	4,800	400
Fortifications under construction.—Table C	On hand.....	.....	.....	.....	.....	1,700	21,000	1,100	3,900	1,200	6,800	.....	.....
	To be provided	6	4	10	7,700	.....	.....	.....	.....	.....	2,900	4,400	400
Works to be constructed after those in table D, statement 1, are completed.—Table E.	Required .....	.....	.....	.....	2,400	2,400	9,400	.....	600	600	900	1,500	.....
	On hand.....	.....	.....	.....	.....	2,400	5,915	.....	600	600	.....	900	.....
Works to be last commenced.—Table F	To be provided .....	.....	.....	.....	2,400	.....	3,485	.....	.....	.....	900	1,500	.....
	Required .....	.....	.....	.....	.....	.....	600	900	200	.....	.....	900	.....
Grand total required	On hand.....	.....	.....	.....	.....	.....	600	900	200	.....	.....	900	.....
	To be provided .....	.....	.....	.....	.....	.....	600	.....	.....	.....	.....	900	.....
Grand total on hand	Required from A to E.....	7	4	12	10,100	5,800	33,703	1,900	5,000	2,100	10,900	7,400	400
	Required	8	5	14	11,800	6,100	39,400	2,100	5,400	2,500	12,700	8,600	500
Grand total to be provided	On hand.....	.....	.....	.....	.....	.....	39,400	2,100	5,400	2,500	.....	.....	.....
	To be provided	8	5	14	11,800	6,100	39,400	.....	.....	.....	12,700	8,600	500
Grand total required	Grand total required	15	9	26	21,900	11,200	73,100	3,900	10,400	4,600	23,600	16,000	900
	Grand total on hand .....	.....	.....	.....	.....	5,300	29,615	3,900	10,800	4,600	7,800	.....	.....
Grand total to be provided	Grand total to be provided	15	9	26	21,900	6,100	43,485	.....	.....	.....	15,800	16,000	900
	Grand total on hand .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Estimated cost of ordnance of all kinds required for the armament of fortifications, &c.—Continued.

Fortifications.	Ordnance.	PROJECTILES.		CANNON POWDER.	COST OF ARMAMENT.					
		10-inch shells.	Charges for stone mortars.		Pounds.	Cannon.	Carriages.	Projectiles.	Powder.	Total amount.
Old forts and batteries.—Table A	Required	900	.....	38,950	\$20,380 00	\$20,660 00	\$9,138 00	\$7,790 00	\$57,948 00
	On hand.....	900	.....	38,950	15,550 00	13,300 00	6,768 00	7,790 00	43,362 00
	To be provided .....	.....	.....	.....	4,770 00	7,460 00	2,378 00	.....	14,608 00
New fortifications completed.—Table B	Required	1,900	400	527,450	164,075 00	164,745 00	76,870 00	65,490 00	471,180 00	
	On hand.....	1,900	.....	95,735	101,975 00	78,185 00	43,636 00	19,147 00	942,673 00
	To be provided .....	.....	400	.....	.....	62,100 00	86,660 00	33,944 00	46,343 00
Fortifications under construction.—Table C	Required	300	.....	132,400	62,530 00	59,850 00	23,812 00	24,480 00	176,778 00
	On hand.....	300	.....	.....	43,150 00	6,300 00	11,943 00	.....	60,593 00
	To be provided .....	.....	.....	192,400	19,380 00	53,750 00	12,569 00	24,480 00	110,179 00
Works to be constructed after those in table D, statement 1, are completed.—Table E.	Required .....	.....	.....	6,700	3,550 00	3,590 00	1,378 00	1,340 00	9,852 00
	On hand.....	.....	.....	.....	500 00	.....	244 00	.....	744 00
	To be provided .....	.....	.....	6,700	3,050 00	3,590 00	1,128 00	1,340 00	9,108 00
Works to be last commenced.—Table F	Required from A to E.....	2,400	400	493,500	250,475 00	248,945 00	111,192 00	99,100 00	769,712 00	
	Required	9,800	500	579,850	293,080 00	290,990 00	130,181 00	115,970 00	830,321 00	
	On hand.....	.....	.....	.....	7,750 00	7,500 00	5,412 00	.....	20,653 00
	To be provided	9,800	500	579,850	285,330 00	283,490 00	124,769 00	115,970 00	809,559 00	
	Grand total required	5,200	900	1,075,350	543,555 00	539,935 00	241,373 00	215,070 00	1,559,933 00	
	Grand total on hand.....	9,400	.....	134,685	168,925 00	105,035 00	67,987 00	26,937 00	268,174 00
	Grand total to be provided.....	2,800	900	940,665	374,630 00	434,910 00	174,086 00	182,133 00	1,171,759 00	

NOTE.—The cost of saltpetre and brimstones may be estimated at one-half of the cost of gunpowder.

ORDNANCE OFFICE, Washington, January 16, 1890.

REPORT ON THE NORTHERN FRONTIER.

This frontier extends, as described by the terms of the resolution, from Lake Superior to Passamaquoddy bay, a distance of somewhat more than two thousand miles, binding all the way on the British American Provinces.

Whether we regard the strongly marked geographical features of this frontier, presenting, as it does, for the most part, a chain of great lakes or inland seas, stretching along the border, the common property of both nations, and affording facilities for an extensive commerce, almost rivalling that of the ocean itself; or whether we look to the growing strength of our colonial neighbors, fostered by the immense power and resources of the mother country; its vast importance cannot fail to impress us with the necessity of being prepared, not only for defence along that line, but also to act offensively, with decisive effect, in the event of our being involved in a conflict.

From the peculiar character of this frontier, its defence must necessarily partake somewhat of the system applicable to the seacoast; for, although it is denominated inland, in contradistinction to the latter, it is, nevertheless, maritime in many of its features, and must be treated accordingly for purposes of defence.

So important is the mastery on the lakes, in any military operations in that quarter, that it is scarcely to be doubted that, in the event of war, there will be some naval preparations on both sides, and a struggle for the ascendancy on those waters. Whichever power shall acquire that, even temporarily, will have the means of assailing his adversary with great effect along the shores of the lakes, in the absence of fortifications, by occupying the harbors, destroying the towns, (some of which are fast advancing to the rank of cities,) and controlling the commercial operations of which those lakes constitute the principal channel. These considerations render it highly expedient—indeed, necessary—to fortify the larger harbors on the lakes, as well as the more important passes on the straits and rivers by which they are connected.

Without entering fully into the military details of the subject, which might be deemed somewhat out of place here, regarding the object of the resolution, which seems to look rather to the expense involved, the board will proceed to enumerate the works of defence deemed necessary on the northern frontier, beginning at Lake Superior; merely glancing at the effects and advantages which are likely to result from the establishment of those works.

1. *Fort at Falls of St. Mary.*—A fort here will control the communication between Lake Huron and Lake Superior, and, at least, prevent an enemy from availing itself of it for purposes of communication and for the transportation of supplies, if it does not secure those important advantages to us; which it would do, unless counteracted by a work on the British side of the line. In that event, almost certain to occur, it would be neutralized, but would still serve to cover and protect our settlements along the St. Mary, and form a rallying point for local defence in times of alarm.

Estimated expense of fort, barracks, &c. \$75,000

2. *Fort at Michilimackinac.*—Although this position is somewhat interior, it is regarded of high importance from its geographical relations. A fort here, in conjunction with floating batteries, may be made to command, effectually, the approach to Lake Michigan, and shut out an enemy who might possess a naval ascendancy on Lake Huron; thus protecting the entire circumference of Lake Michigan from attacks to which it would otherwise be exposed, even from a small force, and securing it to ourselves as a safe channel of communication with the rich and productive States in the rear, whose shores it washes.

Estimated expense 50,000

3. *Fort at the foot of Lake Huron.*—A work here will control the outlet of Lake Huron, and interrupt the navigation between that and Lake St. Clair and the river Detroit. It will serve also to cover the settlements on that part of the frontier, and form a rallying point for the neighboring militia for local defence.

Estimated expense..... \$50, 000

4. *Fort and barrack establishment at Detroit.*—In the event of war, Detroit would undoubtedly be a point of considerable concentration of troops, not merely for the defence of that portion of the frontier, but for such offensive operations as might be deemed expedient in that quarter. It may be regarded as the centre of the upper section of the northern frontier, and has important relations, both geographical and military. Although true policy would, in such a case, dictate that our chief efforts should be directed against the vital points of the enemy's possessions as low down the line as practicable, still it might become expedient, with a view to distract his attention and divide his forces, to menace him above; and this is one of the points from which he might be assailed by minor expeditions, especially if he should relax his measures of defence in looking to his safety elsewhere.

Estimated expense of barracks for one regiment, including site..... \$150, 000

Estimated expense of fort at Spring Wells, including site..... 100, 000

250, 000

5. *Field-work and barrack establishment at or near Buffalo.*—The wealth and commercial importance of Buffalo, and its close proximity to the British line, will make it an object of attack in time of war, unless it be protected by the presence of a respectable force there. It may also become a point of concentration of troops for minor offensive movements, by way of diversion; and is thus, in every view, entitled to seasonable attention. An extensive barrack establishment, defended by field-works, would be sufficient for all necessary objects.

Estimated expense..... 150, 000

6. *Fort Niagara to be rebuilt.*—A fort at this position is important, on the assumption (admitting, it is believed, of but little doubt) that in time of war there would be some naval preparations on Lake Ontario. It commands the entrance into the Niagara river; and a work here will shut the enemy's vessels out from that harbor, while it will afford protection under which ours may take shelter in case of need.

Estimated expense of completing the work now in progress..... \$27, 500

For repairs of buildings and new barracks there.... 37, 500

65, 000

7. *Fort at Oswego.*—The growing importance of Oswego, the relation it bears to the great line of internal communication to the west, and its exposed situation, directly on the shore of the lake, from whence it might be assailed by armed vessels without the co-operation of a land attack, call for works of defence to protect the harbor, and thus secure a safe retreat for our vessels in case of need, while we shut out those of the enemy. Besides, this

place possesses many advantages for naval preparations for vessels of light draught of water, and would probably be made a subordinate depot in time of war.

Estimated expense of completing the works now in progress.....	\$20,000
For barracks, quarters, storehouses, and magazine..	25,000

\$45,000

8. *Fort at Sackett's Harbor.*—In the event of naval armaments of any considerable extent being resorted to on Lake Ontario, Sackett's Harbor, from its bold water, and its excellency as a harbor, would at once become a depot of great importance; the safety of which should be insured against the enterprises of the enemy by the timely construction of appropriate works of defence. Situated directly opposite to the strong post of Kingston, on the Canadian side, and adjacent to the head of the St. Lawrence, it is one of the points at which a concentration of troops may become expedient for the defence of that portion of the frontier and the protection of the naval depot. The barrack accommodations already established there are deemed sufficient, and it remains to fortify the approach to the harbor.

Estimated expense of fort and barracks within

75,000

9. *Fort at the narrows of the St. Lawrence, below Ogdensburg.*—The chief object of a work here would be to cut off the enemy's communication, by the river, between Montreal and Kingston, and thus prevent him from availing himself of that channel for the transportation of troops and supplies if we cannot entirely secure it to ourselves. By this obstruction on the St. Lawrence he would be thrown altogether upon his back line of communication by the Ottawa, which, although it has the merit of being more secure from interruption, is longer and more difficult, especially in seasons of drought. This would also be another point from which the enemy might be menaced, and from which auxiliary movements might be made in aid of the chief attack.

Estimated expense of fort and barracks.....

100,000

10. *Fort near the line on Lake Champlain.*—A work here may be made to command the pass of the lake, and is considered by far the most important of any proposed on the whole line of frontier.

The position of Lake Champlain is somewhat peculiar. While Ontario, Erie, Huron, and Superior stretch their whole length directly along the border, (forming, in fact, the boundary,) Champlain extends deeply into our territory, at right angles with the line of the frontier; and, while its southern extremity reaches almost to the Hudson, it finds its outlet, to the north, in the St. Lawrence, nearly midway between Montreal and Quebec, the two great objects of attack.

This is undoubtedly the avenue by which the British possessions may be most effectually assailed; while, at the same time, it would afford to the enemy possessing a naval ascendancy equal facilities for bringing the war within our own borders if it be left unfortified. It therefore becomes important to fortify a point as near the line as practicable, so as to shut out the enemy's vessels, and thus effect the double object of protecting the interior shores

of the lake from the predatory attacks to which they would otherwise be exposed, and of securing it to ourselves as the great channel by which our troops and supplies may be rapidly thrown forward to the points of attack or defence.

For a permanent work on Stony Point, (N. Y.,) including purchase of site..... \$300,000

For a permanent work on Windmill Point, (Vt.,) including purchase of site..... 300,000

\$600, 000

11. *Barrack establishment and depot at Plattsburg.*—In the event of war, Plattsburg will become the great depot for the operations on the Champlain frontier, the point of concentration of troops preparatory to any offensive movements, and the station of the reserve to sustain those movements, and the posts that may be established in advance. Even in time of peace a respectable force should be posted here, especially during the continuance of the boundary question and border disturbances. Barracks for a regiment, at least, with suitable storehouses, are recommended to be erected, on a plan admitting of extension, if required, and also of suitable defensive arrangements.

Estimated expense of completing the works in progress on the scale here suggested.....

150, 000

12. From Lake Champlain, eastward, the geographical features of the frontier materially change character, and require a corresponding modification of the means of defence. The line no longer intersects great lakes, admitting of naval preparations, nor binds on straits and rivers, the navigation of which may be controlled or interrupted by fortifications. It is altogether *inland* until it reaches the St. Croix, where the principles that have been applied to other portions of the frontier similarly situated will again become applicable. Running on a parallel of latitude to the Connecticut river, and thence along a chain of highlands, not yet clearly defined, to the Province of New Brunswick, the board are not aware that there are any points immediately on the frontier sufficiently commanding, of themselves, to call for the establishment and maintenance of fortifications or works of defence.

Should it ever become necessary to sustain by force our title to the territory now in dispute, it must be done, not by isolated forts along the frontier, commanding, probably, nothing beyond the range of their own guns, but by an active army, competent not only to occupy the country and hold it, but also to assume the offensive, if necessary, and carry the war beyond our borders.

But while it is not deemed expedient to construct a chain of forts along this portion of the frontier, the board consider it a proper measure of precaution, in the present state of our relations with the British provinces, that positions should be selected and preparatory arrangements made for the establishment of depots of supplies at the head of navigation on the Kennebunk and Penobscot. In the event of movements in that quarter, these would be proper points for the concentration of troops, and would serve as a base of operations, whether these should be offensive or defensive in their character.

Estimated expense of storehouses and other accommodations..

150, 000

13. *Fort at Calais, on the St. Croix river.*—A work here, while it will serve to cover that part of the State of Maine from the attacks to which it would otherwise be exposed, may, from its advanced position, be made to act an important though indirect part in the defence of the more northern portion of the frontier. Calais appears to be a very eligible point for the concentration of troops with reference to existing circumstances. A strong force stationed here, threatening the enemy's posts on the lower St. John's, and held ready to strike in that direction in case of movements from New Brunswick towards the disputed territory, could not fail to have a decisive influence on such movements; since it is obvious that they could not be made with safety while exposed to attack in flank and rear, and to have their line of communication intercepted and their depots seized, by a prompt movement on our part from the St. Croix.

Estimated expense of fort and barracks.....

\$100,000

14. In reference to the northern frontier generally, it is the decided opinion of the board that, besides the defences which have been suggested along the border, chiefly for purposes of local protection, there should be a great central station at some position in the interior at which troops might be assembled for instruction, and where they would still be within supporting distance of the more exposed parts of the frontier.

Turning our views inland in search of some single position at which preparations might be made for extended operations on this frontier, and from which aid and succor could always be speedily derived, some position which, while it shall be equally near to many important points of the enemy's possessions, shall afford at no time any indication of the direction in which our efforts are to be made; which will, if it be possible, unite the opposite qualities of being at the same time remote and proximate far as to distance, but near as to time; which, while it brings a portion of the military resources of the country to the support of the inland frontier, and places them in the best attitude for operations in that quarter, whether defensive or offensive, at the same time takes them not away from the sea-coast. Looking for these various properties, we find them all united in a remarkable degree in the position of Albany.

From this place, by steamboat, canal boat, or railroadcar, troops and munitions could be transported in a short time to Buffalo, or onward to Detroit, to Oswego, to Sackett's Harbor, to Plattsburg, to Boston, and along the coast of New England; to New York by steamboat now, and soon by railroad also; and thence onward to Philadelphia, Baltimore, Washington, and the heart of the southern country if necessary. In a word, Albany is a great central position, from which radiate the principal lines of communication to the north, to the south, to the east, and to the west; and combines so many advantages for a military depot that the expediency of occupying it and thus availing ourselves of those advantages would seem to be manifest.

Estimated expense of the purchase of land, and the construction of barracks and other buildings.....

300, 000

Total for northern frontier.....

2, 160, 000

The board beg leave to observe, in conclusion, that, in the preparation of the estimates submitted, they have not attempted to aim at precision. Hence the amounts stated for the various objects are to be regarded only as approximations. They could not be anything more, on the data used, which, for want of minute surveys and reconnoissances, were necessarily vague. It is believed, however, that the results presented will be found sufficiently accurate for the general purposes contemplated by the resolution under which this report has been prepared.

For the board,

JOS. G. TOTTEN,
Colonel of Engineers.

Estimated cost of ordnance of all kinds required for the armament of the northern frontier, embracing cannon mounted, and one hundred rounds of ammunition for each piece.

Armament of—	CANNON.										CARRIAGES.												
	24-pounder guns.	18-pounder long guns.	18-pounder med-um guns.	12-pounder long guns.	12-pounder field guns.	6-pounder field guns.	Carronades.	24-pounder howitzers.	12-pounder howitzers.	8-inch howitzers, heavy.	8-inch heavy mortars.	8-inch light mortars.	Coborns.	Total number of cannon.	For 24-pounders.	For long 18 pound-ers.	For long 12-pound-ers.	For medium and field cannon.	For carronades.	For 8-inch howitzers.	For 10-inch heavy mortars.	For 8-inch light mortars.	For coborns.
Works at Falls of St. Mary.....	4	4	4	4	4	4	4	2	2	2	2	2	2	12	4	4	4	10	4	4	4	2	2
Fort at Michilimackinac.....	4	4	4	4	4	4	4	2	2	2	2	2	2	12	4	4	4	6	4	4	4	2	2
Fort of Lake Huron.....	4	4	4	4	4	4	4	2	2	2	2	2	2	12	4	4	4	10	4	4	4	2	2
Fort for Spring Wells, below Detroit.	10	10	10	4	4	4	4	2	2	2	2	2	2	26	4	4	4	22	4	4	4	2	2
Fort for Buffalo and Black Rock.....	10	10	10	4	4	4	4	2	2	2	2	2	2	26	4	4	4	22	4	4	4	2	2
Fort Niagara.....	12	4	4	4	4	4	4	2	2	2	2	2	2	36	4	4	4	16	4	4	4	2	2
Fort Ontario at Oswego.....	8	8	8	9	4	4	4	2	2	2	2	2	2	37	8	8	9	12	4	4	4	2	2
Sackett's harbor.....	10	10	10	4	4	4	4	2	2	2	2	2	2	26	4	4	4	22	4	4	4	2	2
Fort at the narrows of the St. Lawrence.....	10	10	10	4	4	4	4	2	2	2	2	2	2	26	4	4	4	22	4	4	4	4	4
Fort on New York side, at Champlain.....	64	10	10	4	4	4	20	2	2	2	8	4	4	126	64	10	4	12	20	8	4	4	4
Fort on opposite side.....	64	10	10	4	4	4	20	2	2	2	8	4	4	126	64	10	4	12	20	8	4	4	4
Plattsburg.....	4	4	4	4	4	4	4	2	2	2	2	2	2	18	4	4	4	16	4	4	4	2	2
Headwaters of the Kennebec.....	4	4	4	4	4	8	4	2	4	4	4	4	4	24	4	4	4	22	4	4	4	2	2
Headwaters of the Penobscot.....	4	4	4	4	4	8	4	2	4	4	4	4	4	24	4	4	4	22	4	4	4	2	2
Calais.....	4	4	4	4	4	4	4	2	4	4	4	4	4	24	4	4	4	22	4	4	4	2	2
	132	40	68	9	48	72	40	24	36	16	16	38	16	555	132	40	9	248	40	16	16	88	16

Estimated cost of ordnance of all kinds, &c.—Continued.

Armament of—	PROJECTILES.							POWDER.		COST OF ARMAMENT.				Total amount.
	24-pounders.	18-pounders.	12-pounders.	6-pounders.	8-inch shells.	10-inch shells.	24-pounder shells.	12-pounder shells.	Pounds of cannon powder.	Cannon.	Carriages.	Projectiles.	Powder.	
Works at Falls of St. Mary.....	400	400	400	400	200	---	---	200	2,700	\$1,540	\$3,160	\$1,016	\$540	\$6,266
Fort at Michilimackinac.....	400	---	---	400	200	---	---	200	3,900	2,040	1,960	1,128	780	5,908
Fort of Lake Huron.....	---	400	---	400	200	---	---	200	2,700	1,540	3,160	1,016	540	6,266
Fort for Spring Wells, below Detroit.....	---	---	400	400	400	---	200	200	6,900	3,630	6,920	2,376	1,380	14,306
Buffalo and Black Rock.....	---	1,000	400	400	200	200	200	200	4,700	4,010	7,160	2,928	1,740	15,838
Fort Niagara.....	---	1,600	400	400	200	200	600	200	14,300	6,170	8,460	3,760	2,860	21,250
Fort Ontario at Oswego.....	---	800	1,300	400	200	200	600	200	12,200	6,170	9,650	3,058	2,440	21,918
Sackett's harbor.....	---	1,000	400	400	200	200	200	200	10,200	4,010	7,160	2,928	1,740	15,838
Fort at the narrows of the St Lawrence.....	---	1,000	400	400	400	---	200	200	8,400	3,630	6,920	2,356	1,680	14,586
Fort on New York side at Champlain.....	6,400	1,000	400	400	1,200	400	2,600	200	52,250	31,350	32,620	12,280	10,600	86,850
Fort on opposite side.....	6,400	1,000	400	400	1,200	400	2,600	200	52,250	31,350	32,620	12,280	10,600	86,850
Plattsburg.....	---	400	400	400	200	---	200	200	6,100	2,290	4,960	1,416	1,020	9,686
Headwaters of the Kennebec.....	---	400	400	800	200	---	200	400	6,000	2,890	6,760	1,610	1,200	12,460
Headwaters of the Penobscot.....	---	400	400	800	200	---	200	400	6,000	2,890	6,760	1,610	1,200	12,460
Canals.....	---	400	400	800	200	---	200	400	6,000	2,890	6,760	1,610	1,200	12,460
	13,200	10,800	5,700	7,200	5,400	1,600	8,000	3,600	197,600	106,400	145,030	51,372	39,520	342,322

For the board,

WASHINGTON, April 23, 1840.

JOSEPH G. TOLTEEN, Colonel of Engineers.

REPORT ON THE WESTERN FRONTIER, FROM THE SABINE BAY TO LAKE SUPERIOR.

The principles which should govern in fortifying the seaboard are not considered applicable to our inland frontier, which will very rarely be found to call for regular fortifications. Hence, in relation to that portion of the frontier now under consideration, the duty of the board will be performed by indicating the military positions or stations which should, in their opinion, be occupied by troops, in order to accomplish the objects in view, and in presenting estimates of the probable cost of constructing the necessary barracks, quarters, and store-houses, combined with such works of defence as circumstances may appear to require, to insure their protection against the attacks to which they may be exposed.

The want of personal knowledge, on the part of the board, of our extensive western frontier, and the very limited surveys which have been made in that quarter, have somewhat embarrassed them in the selection of positions; but they desire to be understood as merely designating places in a geographical sense, leaving the particular sites on which the works should be erected to be determined hereafter, by minute examinations of the country at and around those positions; which become the more important, inasmuch as the original locations of some of the places that will be recommended to be retained have been considered faulty.

The southern section of this frontier, extending from the Sabine bay to the Red river, borders all the way on Texas, and has, it is believed, little or nothing to apprehend from Indian aggressions. The Comanches, the only tribe of any power in that quarter, are represented as gradually receding to the westward, and the progress of the Texan settlements will tend to push them further from our border. But our relations with the Texan republic, however amicable they may be at present, would seem to require that some military force should be stationed on or near the boundary line; and the board therefore recommend the establishment of two small posts on the Sabine river, suppressing Fort Jesup, which is considered too far within the frontier, or retaining it merely as a healthy cantonment.

As these would be posts of observation, having reference to national police more than to military defence, they ought to be established on the river where the principal roads cross it, by which we should be enabled to supervise the chief intercourse with our neighbors by land, and, at the same time, control the navigation of the Sabine. The points where the Opelousas and Natchitoches roads, leading to Texas, strike the river, are therefore recommended as the positions which should be occupied, and at which barracks for two or three companies, defended by light works, should be constructed.

The middle section, which extends from the Red river to the Missouri, is by far the most important portion of the whole of our western frontier. It is along this line that the numerous tribes of Indians who have emigrated from the east have been located; thus adding to the indigenous force already in that region an immense mass of emigrants, some of whom have been sent thither by coercion, with smothered feelings of hostility rankling in their bosom, which, probably, waits but for an occasion to burst forth in all its savage fury. These considerations alone would seem to call for strong precautionary measures; but an additional motive will be found in our peculiar relations with those Indians.

We are bound, by solemn treaty stipulations, to interpose force, if necessary, to prevent domestic strife among them, preserve peace between the several tribes, and to protect them against any disturbances at their new homes by the wild Indians who inhabit the country beyond. The government has thus contracted the two-fold obligation of intervention among, and protection of, the emigrant

tribes, in addition to the duty which it owes to its own citizens of providing for their safety.

It appears to the board that this obligation can only be properly fulfilled by maintaining advanced positions in the Indian country with an adequate restraining military force, and that the duty of protecting our own citizens will be best discharged by establishing an interior line of posts along the western border of the States of Arkansas and Missouri as auxiliaries to the advanced positions, and to restrain the intercourse between the whites and the Indians, and serve as rallying points for the neighboring militia in times of alarm.

With these views they would recommend the maintenance of Fort Towson, on Red river, and Fort Gibson, on the Arkansas, and the establishment of a post at the head of navigation on the Kansas, and one at Table creek, on the Missouri, below the mouth of the Big Platte, as constituting the advanced positions on this portion of the frontier.

For the secondary line intended for the protection of the border settlements the board would adopt the positions which have been selected by a commission of experienced officers along the western boundary of Arkansas and Missouri, at some of which, it is understood, works are already in progress, namely: Fort Smith, on the Arkansas river; Fort Wayne, on the Illinois; Spring river and Marais de Cygne; terminating to the north at Fort Leavenworth, on the Missouri. They would also recommend the establishment of one or two intermediate posts between the Arkansas and Red rivers, if, on further examination of the country, suitable positions can be selected near the State line. It is not deemed advisable to establish those posts on the route of the road lately surveyed, which (especially the southern portion) is considered too far in advance of the border settlements to accomplish the object in view; but if eligible positions cannot be found along the line, then a post on the road where it crosses the Poteau river, which is not very remote from the settlements, might have a salutary influence.

On the northern portion of this frontier, extending from the Missouri river to Lake Superior, the board would recommend the establishment of a post near the upper forks of the Des Moines river, the maintenance of Fort Snelling, on the Mississippi, and the ultimate establishment of a post at the western extremity of Lake Superior. The last is suggested with some qualification for want of the necessary information by which to determine the channel of communication to that remote position. Whether it shall be through Lake Superior or by the Mississippi and its tributaries, it would in either case be difficult in peace and next to impracticable in time of war. As the position has, however, important geographical relations, and would enable us to extend our influence and control over the Indians in our territory, and afford protection to our traders in that remote region, it would seem to be worthy of early occupation if its maintenance can be rendered secure—a point which can only be determined by a careful examination of the country.

It is nevertheless recommended to retain Fort Crawford, at Prairie du Chien, Fort Winnebago, at the portage of the Fox and Wisconsin rivers, and Fort Howard, at Green bay. These posts are deemed necessary to protect that portion of our frontier, while at the same time they serve to cover an important line of intercommunication between the northern lakes and the western waters.

It has not been thought expedient to continue the interior line of defence suggested for the middle section of this frontier across from the Missouri to the Mississippi river. Our Indian relations in that quarter assume a different aspect. There is no special guarantee of perpetual occupation of that country by the tribes who now inhabit it, nor can it be doubted that they will ultimately be pushed by the advance of our population to the west of the Missouri river. Under those circumstances it is believed that the intermediate post recommended to be established on the Des Moines river, co-operating with the posts on the Missouri and those on the Upper Mississippi, will afford adequate protection to

the border settlements against any attacks to which they are likely to be exposed.

The board have not felt called upon by the terms of the resolution under which they act to project a plan of operations for the western frontier, nor to go into an estimate of the military force that will be required there, further than was necessary to determine the extent of accommodations to be erected and the expense which these will involve. They would, however, observe, that the positions which have been designated will not of themselves have the desired influence in restraining the Indian tribes and protecting our border settlements without the aid of a respectable force, of which a full proportion should be mounted and held disposable at all times for active service in the field. To effect this the works should be so constructed that, while they will afford adequate accommodations for all the troops when they are not actively employed, their defence may be safely intrusted to a small force. With these precautionary measures, and the co-operation of small but effective reserves posted within sustaining distances of the several sections of the frontier, it is believed that peace may be preserved and the first onset of war met until the militia of the neighboring country could be embodied and brought into the field.

It only remains to recapitulate the positions which have been recommended to be occupied, apportion the requisite force, and present a conjectural estimate of the cost of erecting the accommodations and defences deemed necessary at each.

1. For quarters for 100 men at the post on the Sabine where the Opelousas road crosses that river, including defences.....	\$20, 000
2. For quarters for 100 men at the post on the Sabine where the Natchitoches road crosses, including defences.....	20, 000
3. For permanent quarters and other accommodations for 500 men at Fort Towson, including defences.....	100, 000
4. For permanent quarters and other accommodations for 1,000 men at Fort Gibson, including defences.....	180, 000
5. For quarters for 300 men at the post on the Kansas river, including defences.....	60, 000
6. For quarters and other accommodations for 500 men at the post at Table creek, near the mouth of the Platte, on the Missouri, including defences.....	75, 000
7. For quarters and other accommodations for 400 men at the post on the Des Moines river, including defences.....	60, 000
8. For the enlargement and repair of Fort Snelling, to fit it for the accommodation of 300 men, including defences.....	30, 000
9. For quarters for 400 men at the post at the western extremity of Lake Superior, including defences.....	50, 000

INTERIOR LINE.

10. For quarters for 200 men at the post between the Red and Arkansas rivers, including defences.....	50, 000
11. For completing quarters and other accommodatins for 200 men at Fort Smith, including defences.....	50, 000
12. For completing quarters and other accommodations for 200 men at Fort Wayne, including defences.....	50, 000
13. For quarters and other accommodations for 200 men at the post at Spring river, including defences.....	50, 000

14. For quarters and other accommodations for 200 men at the post at Marais de Cygne, including defences.....	\$50, 000
15. For completing quarters and other accommodations in progress for 400 men at Fort Leavenworth, including defences.....	50, 000
Total for western frontier.....	<hr/> 895, 000 <hr/>

All which is respectfully submitted.

For the board,

JOS. G. TOTTEN,
Colonel Engineers.

Estimated cost of ordnance of all kinds required for the armament of the western frontier, embracing cannon mounted and one hundred rounds of ammunition for each piece.

	CANNON.					CARRIAGES.		PROJECTILES.				POWDER.	COST OF ARMAMENT.			
	18-pounder guns, medium.	12-pounder how-itzers.	8-inch light mortars.	Total number of cannon.	For medium and field cannon.	For 8-inch light mortars.	18-pounders.	6-pounders.	12-pounder shells.	8-inch shells.	Cannon.		Carrriages.	Projectiles.	Powder.	Total amount.
Post on the Sabine at the crossing of the Opelousas road.	2	2	1	6	5	1	200	300	100	100	1,550	\$770	\$1,455	\$508	\$210	\$2,043
Post on the Sabine where the Natchitoches road crosses.	2	2	1	6	5	1	200	300	100	100	1,550	770	1,455	518	310	2,043
Proposed establishment for 500 men at Fort Towson.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
Proposed establishment for 1,000 men at Fort Gibson.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
Proposed establishment for 300 men at the Kansas river.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
Proposed establishment for 500 men at a post on Table creek.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
Proposed establishment for 400 men at a post on the Des Moines.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
Repairs, &c., of Fort Snelling for 300 men.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
Proposed establishment for 400 men at a post on western extremity of Lake Superior.	4	12	1	19	17	2	400	1,900	100	900	4,150	9,892	2,523	1,166	830	7,411
Interior line.																
For proposed establishment for 300 men at a post between Red and Arkansas rivers.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
For establishment at Fort Smith for 300 men.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
For establishment at Fort Wayne for 300 men.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
For establishment at Spring river for 300 men.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
For establishment at Marias de Cygne for 300 men.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
For establishment at Fort Leavenworth for 400 men.	10	10	...	10	10	...	1,000	1,000	...	...	1,500	1,000	1,000	950	300	2,550
	8	136	3	151	147	4	800	12,600	300	400	25,350	16,422	17,433	5,161	5,050	41,077

For the board,

Washington, April 22, 1840.

JOSEPH G. TOTTEN, Colonel Engineer.

REPORT ON THE ARMORIES, ARSENALS, MAGAZINES, AND
FOUNDERIES, WHICH ARE MENTIONED IN THE THIRD SEC-
TION OF THE RESOLUTION OF THE SENATE IN THE FOL-
LOWING WORDS, VIZ :

"The armories, arsenals, magazines, and foundries, either constructed or deemed necessary, with a conjectural estimate of the expense of constructing such of said establishments as may not yet be completed or commenced, but which may be deemed necessary."

The necessary arsenals and magazines will be first considered, as armories and foundries, being manufactories of arms destined for general distribution, do not pertain exclusively to any particular frontier. Arsenals and ordnance depots will be understood to include magazines in the general sense of the term; and these establishments will be rated, according to their relative importance or magnitude, in three classes :

- I. Arsenals of construction, which embrace also repairs, and for deposit.
- II. Arsenals for repairs and for deposit.
- III. Depots, or places for deposit and safe-keeping of arms, and other ordnance stores.

I. *On the northern frontier, from Lake Superior to Passamaquoddy bay.*—An arsenal or ordnance depot will be required at some suitable point on the Upper Mississippi; and Fort Crawford, at Prairie du Chien, offers a good position, particularly with reference to supplying the line or tract of country extending southwesterly from Fort Snelling, through the Territory of Iowa, towards the Des Moines river, as well as northwardly toward Lake Superior, and eastwardly through the Territory of Wisconsin to Lake Michigan. The expense of constructing this depot, on a scale commensurate with the probable importance that must be given to it, will be not less than..... \$70, 000 forming an arsenal of the third class.

The Detroit arsenal, on the river Rouge, twelve miles from Detroit, now nearly finished, is an arsenal of the second class, destined to supply the lake frontier from the Sault de St. Marie, the outlet of Lake Superior, to Lake Michigan and Lake Erie..... 20, 000 will effect the completion of this arsenal.

Alleghany arsenal, at Pittsburg, an establishment of the first class, is also available for the supply of the lake frontier, as well as the western frontier, through the western arsenals.

Rome arsenal, of the third class, is the place for deposit for stores required at the posts on Lake Ontario.

Champlain arsenal, at Vergennes, Vermont, also of the third class, will supply the posts on Lake Champlain and the northern part of Vermont. But the whole lake frontier, and the arsenals in that region, may be supplied from the Watervliet arsenal, near Albany, which is an establishment of the first class, and admirably located for the preparation and sending forth of ordnance stores, not only to the northern, but likewise to the maritime frontier. The periods of free navigation of the New York canals and the Hudson river are used for the distribution from Watervliet of such supplies as may be required in the winter season.

The Kennebec arsenal, at Augusta, Maine, of the second class, is designed to supply the northern and eastern frontiers of that State, and part of New Hampshire; but arms would be furnished to the frontier of the latter State from Springfield armory, and

ordnance stores would be passed up the valley of the Connecticut from arsenals either east or west of that river.

It may become necessary to establish a depot on the Penobscot, at Bangor. But this point is only sixty miles from Augusta; and no estimate of the cost is furnished, as the deposit would probably be temporary.

II. *The maritime frontier from Passamaquoddy bay to Cape Florida.*—The Kennebec arsenal is the place of deposit for the greater part of the sea-coast of Maine; the sum of.....

\$30,000

will finish the additions required.

The Watertown arsenal, five miles in the rear of Boston, also of the second class, will supply the westerly part of Maine, the sea-coast of New Hampshire, Massachusetts, and Rhode Island; and

25,000

will be required for additional buildings and enclosures.

Both the Kennebec and Watertown arsenals are of considerable extent, with every facility for being converted into arsenals of the first class; and the construction of gun-carriages, necessary for arming the forts and batteries within the limits above stated, may be effected at both or either. The Watervliet arsenal, before mentioned, is, however, the principal one relied on for supplies required, not only from Cape Cod to the capes of Delaware bay, but for much of the maritime as well as the lake frontier. Additional quarters and storehouses at this post will cost.....

50,000

A depot in the harbor of New York receives articles from Watervliet, during the season of navigation, which are transhipped, in time of peace, to all parts of the coast and to the Mississippi. During a war, supplies would be furnished from arsenals in the more immediate vicinity of the sea-coast defences, viz: Frankford arsenal, six miles above Philadelphia, is of the second class, and will supply works on Delaware bay and river; Pikesville arsenal, of the third class, four miles from Baltimore; Washington arsenal and Fort Monroe arsenal, both of the first class, will furnish what may be required for the sea-coast defences of Chesapeake bay and Potomac river. The last mentioned was established with special reference to the construction of the gun-carriages required at that post and at Fort Calhoun. It has been found advantageous, however, to construct there carriages for other southern forts; but it cannot be considered as a permanent establishment of the first class, to be kept up after the occasion which called for it shall have passed by.

The North Carolina arsenal, at Fayetteville, on Cape Fear river, is under construction, and was originally intended to be made one of the first class. Doubts have been entertained whether it ought to exceed those of the second class; but the plan is such that it can at any time be extended according to the original design. The sum of eighty thousand dollars will be required to finish it as one of the second class.....

\$80,000

Charleston depot is at present of diminutive capacity. It is proper to enlarge it, and thirty thousand dollars will make it useful as a place of deposit.....

30,000

Augusta arsenal, at Augusta, Georgia, is of the second class, and with the two last mentioned will furnish supplies required from Chesapeake bay to Cape Florida.

The Augusta arsenal has its powder magazine detached and

located at an inconvenient distance, beyond the control of the force at the post. For the construction of a new magazine, and other necessary additions to this establishment, sixty thousand dollars will be required..... \$60, 000

Several of the arsenals have been built upwards of 20 years, and require extensive repairs and additions, which it is supposed may be effected, from time to time, by the aid of annual appropriations, amounting in all to about..... 180, 000

III. "*The Gulf frontier, from Cape Florida to Sabine bay.*"—Appalachicola arsenal, at Chattahoochee, just below the junction of the Chattahoochee and Flint rivers; Mount Vernon arsenal, on the Mobile river; and Baton Rouge arsenal, on the Mississippi, are all establishments of the second class, and destined to supply the whole Gulf frontier, and the forts below New Orleans, on the Mississippi. About sixty thousand dollars will be required to complete them, and erect some additional buildings at Baton Rouge.. 60, 000

IV. "*The western frontier, from Sabine bay to Lake Superior.*"—Baton Rouge arsenal, already mentioned, will furnish supplies for posts on the Sabine and Red rivers.

Little Rock arsenal, just commenced, will be the source of supplies for posts on the Arkansas, and along the western border of that State. It will necessarily become at first an arsenal of the second class, with the depot at Memphis as subsidiary, and will require one hundred thousand dollars to complete it..... 100, 000

St. Louis arsenal is a large establishment of the second class, but, with very little expense can be raised to the first class; with the subsidiary depot at Liberty, on the Missouri, it will supply the posts on that river, the western border of the State, the posts on the Des Moines, and the Upper Mississippi.

A depot at Prairie du Chien, mentioned in relation to supplies required in the direction of Lake Superior, and southwesterly, through the Territory of Iowa, would be sustained by the St. Louis arsenal, and completes the chain upon the several frontiers embraced in the resolution.

Total amount required for constructions, additions, and repairs to arsenals and depots..... 705, 000

Armories.

The two national armories at Springfield, Massachusetts, and Harper's Ferry, Virginia, are the only public establishments for the manufacture of small arms. They furnish about twenty-five thousand stand of arms yearly. This number might be extended; but it has been an object of solicitude with the government for nearly twenty years past to establish an armory west of the Alleghanies.

Commissioners were employed in 1823 to examine the western waters, with a view to the location of an armory. Many sites were surveyed, and careful estimates made of the cost of an armory at each, with an exhibit of their several advantages and disadvantages. The result of their investigations may be found at large in Gales & Seaton's reprint of American State Papers, folios 729 to 790 inclusive, volume 2, Military Affairs.

It is perhaps fortunate that the place then selected was not adopted by Congress; for, since that period, the immense increase, not only of population and the general resources of the western region, but of the particular articles required for the manufacture of arms, by the discovery of masses of coal, and the exten-

sive working of iron mines, where nothing of the kind was then found, has shown that an armory should be located much further west.

The data collected by the commissioners in 1823 may be usefully applied in estimating the probable cost of an armory at the present day, making suitable allowances for the increased price of everything connected with such an establishment. This cost will be found to vary, according to localities of positions, from \$280,000 to \$500,000 for an armory capable of furnishing twelve thousand muskets per year. It will therefore be stated at the mean of \$390,000, to which twenty per cent. should be added; making the sum of. \$468,000

Another mode of proceeding proposed, consists in forming an establishment complete in itself, of limited extent, and having the great mass of component parts of arms manufactured by the piece in private workshops, and only the inspecting, assembling, and finishing be done at the public works. This course would materially reduce the first cost, or necessary expenditure for buildings and tools. It also admits of extension to a great amount of fabrication, with but little additional cost of permanent fixtures. But, whichever mode is followed, or whatever site may be selected for its location, there can be no question of the necessity for an armory on the western waters; and as regards a proper location, it may be observed, that, to consider the relations of an armory in the same light as that of an arsenal or magazine, would be an error; the means of production being the principal requisite for the one, and those of transportation or distribution for the others.

Total required for an armory on the western waters.

468,000

Founderies.

The United States own no cannon foundry. Although possessing some ore beds, from which iron of approved quality for casting cannon has long been made, yet artillery of every description is procured from private foundries. This subject has been so recently before Congress, and so ably treated, that nothing will be said further than to state the probable cost of such an establishment; and here, again, so much depends upon the location, that only an approximation will be attempted. A report from the War Department made to the 24th Congress, 1st session, Doc. No. 106, states the cost of a foundry, to be located at Georgetown, in the District of Columbia, at \$312,000. If this estimate is correct, (and it is known that great care was bestowed on its preparation,) it may be assumed that about. \$300,000

will be required for a foundry when favorably located for the use of water power. Should steam power be adopted, the first cost of the establishment would be less, while the annual expenditure would be greater than for water power.

As regards a suitable location for a foundry, the great weight and bulk of the raw materials used in the manufacture of cannon, and the weight of heavy guns, which are required for use only on the seaboard, would seem to demand that particular attention should be given to the means of transportation both to and from the foundry.

Total amount required for a foundry.

300,000

Recapitulation.

Total amount required for constructions, additions, and repairs to arsenals and depots.....	\$705, 000
Total amount required to establish an armory on the western waters.....	468, 000
Total amount required to establish a national foundry.....	300, 000
Total.....	1, 473, 000

All which is respectfully submitted.

By order of the board,

JOS. G. TOTTEN,
Colonel of Engineers.

MEMORIAL OF EDMUND P. GAINES.

To the Senate and House of Representatives of the United States of America in Congress assembled:

The memorial of Edmund Pendleton Gaines, a major general in the army of the United States, commanding the western division, respectfully sheweth: That, believing the federal and State constitutions guarantee and consecrate to every free citizen capable of bearing arms the *right and duty* of participating alike in the civil and military trusts of the republic, solemnly requiring the soldier to exert his every faculty "*in peace to prepare for war*," so that on the recurrence of war he may be well qualified to fight the battles of his country in the greatest possible triumph, and at the least possible cost of blood and treasure; requiring him, moreover, to study and respect her political and social institutions; and requiring the statesman to discipline his mind for the state and national defence, by adapting his civil acts and occasional military studies to the purposes of the national defence and protection, as well against foreign enemies in war as against the home incendiary and other *criminal offenders in peace*; thus rendering the statesman and soldier equally familiarized with their common kindred duties of *self-government* and *self-defence*: by a knowledge of which our independence was achieved, and without which this inestimable blessing cannot be preserved;—your memorialist, a native Virginian, a citizen of Tennessee, schooled in *her cabins and her camps* to the profession of arms, has, within the last seventeen years, matured a system of national defence, to which he now respectfully solicits your attention and support: a system of national defence which the late giant strides of invention and improvement in the arts have rendered *indispensable to the preservation of the Union*: a system of national defence which recommends itself peculiarly to the central, southern, and Atlantic States, as well as to those of the north and west; as it assures to our isolated central States of Tennessee and Kentucky, and to all the western States of Ohio, Indiana, Illinois, Missouri, and Arkansas, in peace, commercial advantages equal to those enjoyed by the most favored eastern, Atlantic, or southern States; and *in war*, giving to the disposable fighting men of these central and western States the inestimable privilege of flying with unprecedented certainty, celerity, and comfort to any of our vulnerable seaports, to aid our brethren of the border States to repel the invading foe; and to accomplish this essential duty in one-tenth part of the *time*, and one-tenth part of the *expense*

that would attend such an operation over our present bad roads. But, above all, to accomplish these great and good objects by means that will more than double the value of our State and national domain, and without expending a dollar that may not be insured to be replaced in the public coffers in from seven to ten years after the completion of the work here recommended.

Your memorialist is admonished by the universal employment of steam power, and its applicability to every description of armament hitherto moved upon the sea by wind and canvas, or upon the land by animal power, that an epoch is at hand in which the art of war, in whatever regards the attack and defence of seaports, has undergone an unparalleled revolution.

Hitherto the transition *from peace to war* between neighboring nations, though sometimes sudden and unexpected, was usually preceded by some significant note of preparation not easily mistaken; and after the actual commencement of hostilities there were frequent opportunities and ample time for the belligerents, and more particularly for the nation acting upon the unerring principle of *self-defence*, to complete the *work of preparation for war* before the *work of destruction* upon her principal seaport towns had been begun by the invading foe. Hitherto the enemy's fleets were to be seen for weeks, often, indeed, for months in succession, "*standing off and on*," waiting for suitable winds and weather to enable them to enter and attack the destined port, and then, in case of accident, to carry them safely out again—winds such as could never be calculated on with anything like certainty. Hence the great and unavoidable delay in the attack by fleets propelled by wind and sails has often enabled the people of the threatened seaports to throw up works of defence; and after slowly marching their interior volunteers and other forces at the rate of twenty miles a day, they would in time be so well prepared for action that the menacing invaders have but seldom ventured to attack places of much importance, but have usually condescended to vent their prowess in a petty border war against villages and private habitations, as upon the Chesapeake bay and the Georgia sea-coast in the war of 1812, 1813, and 1814.

If the obvious effect of steam power, in the rapid movement of everything to which it has been applied around us, has not been sufficient to convince us of the expediency and transcendent advantages *in war and in peace* of the proposed immediate work of preparation, by steam power, to guard against the incalculable disasters that must otherwise attend the sudden outbreak of war with any of the great nations of Europe able to send against us even a small fleet propelled by steam power, it would seem obvious that the late naval and military operations in the harbor of Vera Cruz were sufficient to prove clearly, that to bring a hostile fleet *inside the breakers* of a seaport of the country invaded, and within the desired range of the best of cannon and mortars for *red-hot shot and shells* of one of the strongest castles in America, was the work of but two hours; and that the utter destruction of that castle by three small ships-of-war required but four hours more.

To provide for the defence of our seaports, and thus effectually to obviate the possibility of a sudden calamity like that which has befallen the castle of San Juan de Ulloa, and to enable us to repel by the agency of steam power every invasion suddenly forced upon us by fleets propelled by steam power, I now submit for the consideration of the national legislature the project and explanatory views which follow :

ART. I. *Floating batteries for the defence of the seaports and harbors of the United States.*

1. Your memorialist proposes the immediate construction of from two to four large floating batteries for the defence of each navigable pass into the Mississippi river, and from two to five others for the defence of every other navigable inlet leading into any of the principal seaports of the United States. Each floating

battery to be from 200 to 300 feet long, and from 90 to 150 feet wide—the bottom to be as nearly flat as the best tested principles of naval architecture will allow, consistently with the great weight of timber and metal to be provided for, with the requisite facility of the movement that will be required over shoal water. Each floating battery to be secured in the bottom and sides with copper sheeting, and copper or iron bolts; and on the upper parts, exposed to the enemy's shot and shells, with the thickest sheet iron, and iron bolts; and otherwise made capable of sustaining a heavier broadside than the largest of our ships-of-war is capable of sustaining; to carry from one hundred and twenty to two hundred heavy cannon—say long 24 and 32-pounders, with some 80-pounders for carrying hollow shot, together with some mortars for throwing shells; with a furnace for heating red-hot shot for illuminating the enemy's fleets and transports. Each floating battery to have state-rooms for the comfortable accommodation of from 600 to 1,000 men, with storerooms for all the munitions of war requisite for that force for six to eight months' service. Each floating battery to be attended and propelled by such number of tow-boats as the exigencies of the service shall from time to time demand—to be permanently stationed in each harbor in time of peace, and in war as many tow-boats to be chartered as the commanding officer may deem necessary to render the floating batteries in the highest degree efficient. As in war tow-boats will seldom be needed for the merchant service, an ample supply of them, particularly in our large seaports, may be chartered on moderate terms: for example, in the harbor of New Orleans it is believed that twelve tow-boats, with several steamboats having the best of engines to be converted into tow-boats, would be thrown out of employment during a state of war. These could be usefully employed in the United States service, in aid of the public tow-boats and floating batteries. But should this reliance be deemed unsafe, we can readily adopt the obvious alternative of having each floating battery supplied with two tow-boats of great power, as in war they would be needed near the batteries, ready to wield them in the event of an attack, and at other times to act as tenders in supplying them with men and munitions of war. In a state of peace the floating batteries, it is believed, would require but one tow-boat each, excepting when employed in deepening the ship channels—a work which may be accomplished with the most perfect ease and to any desirable extent, wherever the bottom of the channel consists of mud and sand, as in all the outlets of the Mississippi. This important work will be done by attaching to the bottom of each floating battery a framework of *ploughs and scrapers of iron*, made to *let down and raise up* at pleasure, according to the hardness or softness of the clay and sand, or mud, of which the bar or bottom of the channel may be composed. If very hard or tough, the ploughs and scrapers might not break up and take off more than two to four inches in depth at one movement; but where the bar is composed entirely of soft mud, as that at Balize and the Northeast and Southwest passes have often been, from four to six inches in depth, it is believed, may be carried off at once—wherever the bar is very narrow, and in the immediate vicinity of very deep water, which would be the reservoir or place of deposit to which the mud and sand would be removed. But in a state of peace, when the batteries should not be employed in deepening the ship channels, their extra tow-boats might be advantageously employed in the merchant service.

2. Floating batteries such as are here proposed, constitute, as your memorialist verily believes, the only sure means of defence of the passes into our seaports against ships-of-war propelled by steam power—means of defence without which it is in the power of any nation, or community of men, or pirates, capable of fitting out ten or even five such steamships-of-war as those employed in the destruction of the castle of San Juan de Ulloa, to destroy the city of New York or New Orleans by fire, with the newly invented 80-pound cannon shot and shells, in a single day, at any season of the year; approaching them in the

night, and taking them by surprise: as with such a fleet, well manned and supplied, either city could be fired in five hundred places in one hour; and in a few hours more thousands of the most splendid edifices, by which these magnificent cities are embellished, would be reduced to ruin and desolation.

3. This opinion has not been formed without a full knowledge of the fact that both New York and New Orleans number among their citizens many men and volunteer corps of military science, patriotism, and unsurpassed chivalry. But these fine volunteer corps, attacked by means and by weapons hitherto unknown to them, or unprovided for, and thus taken by surprise, may share the fate of the heroic Danes at Copenhagen, when attacked by Nelson; with this striking difference in their favor, and against us, the Danes were not taken by surprise. A protracted negotiation with England preceded the attack; and after the British fleet had made its appearance on the coast of Denmark, and in sight of their harbor, they had some three or four days for preparation; they had a fleet nearly equal to that brought into action against them by Nelson, together with an army of some thousands of men, seamen, soldiers, and volunteers, with several fortifications on land, aided by some floating batteries—presenting altogether an armament of upwards of 1,000 cannon, with an immense supply of small arms and every requisite munition of war. In this state of preparation the harbor of Copenhagen was entered in open day by twelve ships of the line—three of which were rendered nearly useless by having got aground; with nine ships of the line, therefore, Nelson sustained a close action for four hours, during which time his loss was less than one thousand, while the loss of the Danes was near six thousand men, together with their fleet—to say nothing of the losses sustained by the inhabitants of the city. This was the result of an attack with nine ships of the line, propelled by wind and sails, upon the seaport of Copenhagen, when strongly fortified and defended by large naval and land forces. What then must be the fate of such a city as New York, or New Orleans without any effective means of defence, attacked by ten, or even five ships-of-war, armed with the newly invented 80-pounders, and propelled by steam power? We know that a fleet consisting of this description of ships-of-war may cross the Atlantic from a European port to New York in the short space of fourteen days' time, and that it may enter our harbors in the night, and be seen at our wharves, with matches lighted ready for action, at daylight in the morning—ready to take or destroy money or property amounting to ten times as much as all the floating batteries and railroads embraced in the proposed system of national defence would cost. In the outrageous attack on Copenhagen, England was fighting for *the dominion of the sea*. Denmark and Sweden, with Russia and France, were then nobly opposing that lawless pretension, as we, the United States, have long opposed it. Nelson, on embarking in the expedition, is reported to have said to his commander, Admiral Parker, "I hope we shall give our northern enemies that hail-storm of bullets, which gives our *dear country the dominion of the sea*; we have it, and all the devils in the north cannot take it from us if our wooden walls have fair play." This is the language of a truehearted British seaman and soldier. Such was the noble bearing of our own Decatur, when he exclaimed, "Our country! in her intercourse with foreign nations may she always be right; but in war may she always triumph—right or wrong!"

In the memorable attack on Copenhagen, it is worthy of remark here that the experienced Admiral Nelson, who had won more great naval victories than any other commander had, previous to the action stated to the commander-in-chief the following opinion: "If the wind is fair, and you determine to attack the ships and Crown islands, *you must expect the natural issue of such a battle—ships crippled, and perhaps one or two lost; for the wind which carries you in will most probably not bring out a crippled ship.*" Nelson, however, had the good fortune, after taking and destroying a fleet nearly equal to his own, and killing six times as many men as he lost in action, to sail out of the harbor, which

he had filled with wrecks, without the loss of a single British vessel, though he had several greatly damaged.

4. With floating batteries, such as are here proposed, it is more than probable that the brave Danes would have destroyed the whole of Nelson's fleet without sustaining the loss of a vessel, a battery, or one hundred men. The floating batteries of the Danes, like those of the French and Spaniards at the siege of Gibraltar in the year 1783, were inefficient, simply because they were unwieldy. No effective means for *wielding* floating batteries, when large enough to be formidable, had ever been discovered previous to the discovery by Robert Fulton of that development of steam power applicable to ships and all other floating structures. With regard to the ten great floating batteries, especially constructed for the memorable siege against Gibraltar, it is obvious to every man of military mind that, however formidable such batteries might have been, even without towboats, or steam power in any other form, employed in the *defence* of a high rock fort like that of Gibraltar, such floating batteries could never be relied on as effective *means of attack* upon a high rock fort of that description, as the immense *strength of the position and of the work*, with the great *elevation* of the cannon of the work attacked, would insure the destruction of floating batteries, or render an attack by them unavailing. It is a well ascertained fact, however, not generally known, as but few historians have noticed it, that the floating batteries employed in the siege of Gibraltar were manned principally with *convicts*. This fact may be considered as the most conclusive among the principal causes of their failure, as well as of the opinion entertained and expressed by the French and Spanish commanders, that most of these batteries were set on fire by the men on board, whose duty it was to defend them. Be this as it may, a minute examination of the *military history* of the terrible siege of Gibraltar is respectfully referred to by your memorialist as evidence in favor of his proposition for the immediate construction of floating batteries for the *defence* of our ports and harbors; inasmuch as it is obvious that, if the commander of Gibraltar had been supplied with ten floating batteries, such as are here proposed, with our present means of towboats, with steam power to wield them, he would have destroyed the whole of the combined fleets employed against him, or at least have kept them out of the bay or harbor of Gibraltar. To the siege of Gibraltar and the attack on Copenhagen, two of the most terrible and extraordinary events known to modern history, in reference to the *attack and defence of seaports*, an event known to your memorialist and many other officers now in service will be added, to show the utter impracticability of locking up a navigable river or inlet, or of arresting the movement of a fleet thereon, by fortifications with cannon placed on the banks of such river or inlet. On the night of the 6th of November, 1813, the flotilla, under the command of Major General Wilkinson, consisting of nearly 300 boats, sloops, and schooners, passed the fort of Prescott, upon the Canada side of the river St. Lawrence, under a constant fire of the cannon of the fort, manned by the best of British artillerymen, without the loss of a boat or other vessel, and with the loss of but one man killed and two wounded; notwithstanding the flotilla was nearly one hour in the act of passing the fort, during the whole of which time the fire of the enemy's cannon was incessant, and the line formed by the flotilla in its movement was deemed to be within pointblank shot of the fort—say from 600 to 800 yards' distance! This fact was proven by the whistling of the enemy's shot, many, probably hundreds, of which passed apparently from 20 to 50 feet above our heads, while on board the boats in their slow passage, for they were propelled by oars, upon a gentle current, which enabled us to move at the rate of not more than three miles an hour. This movement was effected in the night, tolerably clear, but without moonlight. With the history of these three events before us, it would seem to be the height of imprudence in us to persevere in the construction of

costly forts, with the vain hope of protecting our seaports against fleets propelled by steam power, without the employment of floating batteries, such as are here recommended, with railroads to sustain them by timely re-enforcements.

5. But it has been contended by men of high pretensions in theory, if not in the practical science of war, that, in place of the floating batteries here proposed as means of *harbor defence*, we should direct our attention mainly to the construction of *steamships of war*. In reply to this theoretical suggestion, it is only necessary to say that we must, indeed, ultimately have *steamships of war*, or we must give up the whole of our foreign commerce; but, if we desire to preserve our seaports and commercial emporiums, we *must* have for their protection *floating batteries*, which constitute, in the present state of the arts, the natural link in the great chain of national defence between the land and naval means of service: and, as these floating batteries are not designed for going to sea, (excepting near our ports and harbors, in calm weather,) they properly belong to the land service. The fact that our seaports are rendered more than ever liable to sudden and unlooked-for attacks by fleets propelled by steam power, renders it all-important to their security that our means of harbor defence should never, even for a single day, be left exposed to an assault, when that assault may, in all human probability, result in the destruction of one of our most vital points of military and commercial operations. If, however, *steamships of war* should be preferred to the proposed floating batteries, a solemn act of Congress should be passed, forbidding any officer from removing them beyond the immediate vicinity of the harbor to which they may be assigned; as it must be obvious that our seaports cannot be protected without every requisite means of protection is held ready for action within our harbors, respectively. The floating batteries, it is believed, will cost but little more than the timber, iron, copper, and other materials for their construction, if they are built, as they should be, by the troops intended to defend them, aided by some ship-carpenters to give them tight bottoms.

6. With three to five of the proposed floating batteries placed in the form of a crescent across the Mississippi river, with the concave side of the crescent down the river, and this curved line of floating batteries flanked by a small temporary fort on each bank of the river, so as to bring the cannon of each fort or battery to bear on any fleet or vessel *ascending the river from the sea*, we should be certain thus to give each of the enemy's leading vessels a *double cross-fire*; raking them in front and on each side at one and the same time, with several of our heavy guns from each one of our floating batteries and adjacent forts, *with red-hot shot*—a description of defence which would to a certainty, in 99 cases out of 100, be fatal to any fleet that could possibly be brought against our line of batteries. But, "to make assurance doubly sure," we could have our floating batteries occasionally connected together by *chain cables* and *chevaux-de-frise*, which might sometimes bring us in close contact with a daring foe, as Nelson or our own Decatur and Perry were in the mode of attack which characterized those chivalric naval commanders. But the contact thus produced would insure to us the moral and physical effect of our efforts being in *self-defence*, with the superior strength of our *batteries, bulwarks, and weight of metal*—advantages which we should enjoy from the moment the invading foe comes within the range of our long and heavy cannon, until he finds himself entangled in, and arrested by, our *chevaux-de-frise*, where the contact would be so close as to enable us to throw into his ships *hand grenades* and *incendiary shells*, with an occasional supply of heated steam; while our own batteries would be preserved from a similar annoyance by their superior width, strength, and peculiar structure of their upper works, which are proposed to be secured by sheet-iron of immense thickness; a description of work which it is believed could not be so effectually applied to vessels of anything like the ordinary model of ships-of-war designed for sea service.

But again: "to make assurance doubly sure," we should not risk such places as New York and New Orleans—by far the most vital, and in a civil and (the latter more especially) in a military point of view, the most important seaports in America—without at least two curved lines of defence—one at or near the entrance of the harbor, and the other at the next narrow, strong, interior point, fortified as above suggested, with the curved line of floating batteries flanked by a fort on each side of the river or channel; for example, for the harbor of New York, *the Narrows*; and for the Mississippi, *Forts Jackson* and *St. Philip*.

7. Floating batteries, such as are here proposed, constitute the only effective means of defence against fleets propelled by steam power, in a nation situated as the United States are, covering a large extent of country, bordered by a seaboard of near 4,000 miles in extent, indented by many fine seaports, with great cities filled with the wealth of a lucrative commerce with every quarter of the globe, together with our own agricultural products, fully capable of sustaining our expansive commerce, until it surpasses that of any other part of the globe: provided we take care to maintain an attitude of honest defiance towards the licensed as well as the unlicensed pirates of every quarter of the world, by which they will clearly understand that we desire to be at peace, to do equal and impartial justice to all nations, and to engage in entangling alliances with none; and above all, if we are attacked, we should be prepared speedily to concentrate at the point of attack sufficient force and supplies to overwhelm the invader with irretrievable defeat before he will have it in his power to destroy any of our means of defence, or our seaport towns. Our lawless neighbors will thus be taught that if they attack us they do it at their peril, and at the risk of leaving their armies to enrich our plantations.

8. So much for their uses in a state of war; then, on the return of peace, when the most expensive fixed fortifications are absolutely useless, and, moreover, a heavy burden to the country to keep them in repair, floating batteries will be usefully employed as barracks and hospitals, and in deepening the channels, liable to be filled up by clay, and loam, and sand, as those at the mouth of the Mississippi river are often filled up. As floating barracks and hospitals, the proposed batteries would be of essential benefit to the service everywhere, inasmuch as the outlets of our rivers and seaports are generally healthy positions; and they will form the most appropriate asylums for our convalescent or slightly disabled soldiers or seamen, most of whom will render essential service in preparing fixed ammunition, and in the instruction of the young and inexperienced, and in holding them ready for action. Above all, in a state of peace the proposed floating batteries will be of immense utility to the service for all purposes of military schools, to which the aspiring youth of our country of the community will gladly repair, for the attainment of military knowledge, where it can be acquired both in *theory* and in *practice*, and where its study and practice will be rendered most delightful and praiseworthy by the simple process of the students rendering immediate and important public service in return for the public instruction received by them. The military education of our youth should commence at the age of sixteen, and be completed at the age of twenty-one or twenty-two. If our youth are educated upon floating batteries at the entrance of our harbors near the Balize, Sandy Hook, or the Narrows; otherwise, if the youth of each Atlantic or southern State are educated at the entrance of the principal seaport of such State, the graduate, after finishing his education, would have the proud satisfaction of exhibiting to his parents or guardian, on his return home, the gratifying evidence of his having performed five years' honorable service, while acquiring attainments qualifying him for a high, perhaps the highest, command in the army; attainments, too, tending to qualify him in no small degree for the highest stations recognized by the free institutions of our country, and exonerating him for ever after from any other than mere voluntary service.

9. Shall we be told by the advocates of our *obsolete* systems of national de-

fence that the risk of health and comfort is too great to have the youth of our country educated upon our floating batteries at the entrance of our harbors, or at the mouths of our rivers, where the swell of the sea and the turbid waters of our overflowing Mississippi and other rivers may too sensibly affect the nerves and disturb the meditations of the students on whom the defence and fate of the republic must soon depend? Will our opponents point to the United States Military Academy, and contend that the graduates of that institution are the better for the serene stillness, quiet, and comfort of the interior position of that institution? We may answer, no! no! The only great defect to be found in that institution consists in the *quiet and almost exclusively sedentary mode of living* which has long marked the character of that otherwise admirable institution; a mode of living which contributes too much to sacrifice the vigor of constitution necessary to a real hard-duty soldier, to the attainment of that literature and science, with the social habits and enjoyments more befitting a country gentleman of affluent fortune, than a thoroughbred soldier, statesman, or man of business:

"The life of fame is action understood;
That action must be virtuous, great, and good."

Habits of action, of mind and body, should be formed in childhood, or at least before the seal of manhood is fixed upon the student. Why is the seaman placed on duty on board the ship-of-war at the age of twelve to sixteen, and required to perform his practical labors from the moment he takes his first lessons in the theoretical duties of his profession? It is to facilitate his attainments of both in the shortest possible time, and to the greatest possible extent of perfection. His health and habits are perfected *upon the precise element, and in exposures to the climates and weather*, to which his duties will call him, and often confine him during a state of war. Why is the law student required to attend the courts, and the medical student the hospitals, while attending to the theory of the profession? It is because, even in these learned professions, where much more depends upon books, or theory, than in the profession of arms, all experienced men unite in the opinion that great benefit to the student results from combining practice with theory. The watchmaker, shoemaker, carpenter, and blacksmith, always put their students or apprentices to work at the earliest possible period of their instruction; often, indeed, before they are able to wield many of the tools of their trade. With these facts before our eyes, added to the custom which has obtained in many of the enlightened States of Europe, and which we are apparently disposed to rivet upon our own land of freedom and invention, it would seem impossible to resist the conviction that the science of war is indeed in its infancy. Of all the sciences and arts, there are none where the *union of theory and practice*, in all the duties of *preparation* for the great dernier results, are so much altogether necessary and proper, as in the science of war and the duties of an army; and yet, wonderful to tell, there is no trade or profession, reduced to separate and distinct rules of science and art, in which *theory* is so much relied on, or *practice* so much neglected, as in the art of war, as it regards military operations on land, or in the attack and defence of seaports.

ART. II. So much for *floating batteries*, and their uses in peace and in war. Let us now proceed to consider the all-important kindred measure of railroads, for co-operating with the proposed floating batteries, and perfecting the promised system of national defence.

10. We propose the immediate location and construction of seven railroads, to extend from the two central States of Tennessee and Kentucky to the seven grand divisions of the national frontier, as suggested by a plan embraced in the accompanying diagram, viz:

First One principal railroad from Lexington, Kentucky, to Buffalo or Plattsburg, New York, with branches to Detroit, Albany, and Boston.

Second. One principal railroad from Knoxville, Tennessee, to Norfolk, Virginia, or Baltimore, Maryland, with branches to Richmond, Virginia, and Newbern, North Carolina.

Third. One principal railroad from Memphis, Tennessee, to Charleston, South Carolina, or Savannah, Georgia, with branches to Milledgeville, Georgia, and East Florida.

Fourth. One principal railroad from Louisville, Kentucky, to Mobile, Alabama, with a branch to Pensacola, Florida.

Fifth. One principal railroad from Lexington, Kentucky, *via* Nashville, to New Orleans.

Sixth. One principal railroad from Memphis, Tennessee, to the Sabine ridge, with branches to Fort Towson and Fort Gibson, Arkansas.

Seventh. One principal railroad from Louisville, Kentucky, or Albany, Indiana, to St. Louis, Missouri, and thence to the Missouri river, north of the mouth of the Big Platte; with branches from Albany, Indiana, to Chicago, and from the northwest angle of the State of Missouri to the upper crossing of the river Des Moines.

11. These seven great arteries or principal railroads here enumerated will each be from 500 to 700 miles in length, (averaging 600 miles,) making altogether a distance of 4,200 miles; and the average cost of locating and constructing them is estimated at \$15,000 per mile; amounting, altogether, to the sum of \$64,000,000, provided they are located and constructed by the army of the United States—the railroads to be of the most substantial kind, each having a double track. The whole work to be completed by the authority and at the expense of the United States; provided that, on its final completion, it shall revert to the States, in their sovereign and individual capacity; each State to retain forever the right of property in and to all of such section or sections of the said railroads, with all their appurtenances, lying or being within the territorial limits of such States, respectively, upon the simple condition that all troops, whether regulars or volunteers, in the service of the United States, with their munitions of war, together with the mail, shall be transported forever upon these railroads free of expense to the United States.

12. Without attempting to enumerate all the benefits to be derived from the proposed railroads in peace as well as in war—benefits which are for the most part too generally known to require any particular notice here, (and others, certainly of very great value, can only be conjectured, inasmuch as they are to some extent *invisible*, and to be developed, principally, it is believed, by the excavations necessary to complete the graduation of the basis of the work through the vast regions of *mineral wealth* over which its various lines will extend, where accident has hitherto led to the discovery of a sprinkling of gold, with millions of acres of the richest iron and lead ore and coal, together with copper and other valuable minerals,) your memorialist will here concisely advert to the principal benefits which the military aspect of the proposed work promises, and conclude with a notice of such advantages as must immediately result to the *army*, to the *several States*, and the *UNION*, from the organization and employment of the national regulars and volunteers as operatives upon the work.

13. *The principal advantages to be derived from the proposed railroads in a military point of view.*

In a state of war they will enable us to transport the military men and munitions of war of the two central States of the Union, and of all the interior districts of the twenty-four border States, to the seven grand divisions of the

national frontier, without animal power, in one-tenth part of the time, and at one-tenth part of the expense that the movement would cost in the present state of our bad roads. The proposed railroads would thus enable us to obtain more useful service in war from ten thousand men, by the increased rapidity and safety of their movement to the point of attack chosen by the invading foe, than without railroads we could obtain from an army of one hundred thousand men marched upon our common roads; as, in addition to the saving of *time*, which in war is *power*, and *health*, and *life*, and *money*, we shall save our citizen soldiers from what they usually deem the most irksome and insupportable afflictions and privations attending their tours of military service; we shall save them from long and tedious marches, and from the still more trying scenes of a long-continued delay in camp, and the consequent painful separation from wife, children, friends and business. On the contrary, after being assembled and prepared for action, we shall *fly* to meet the invading foe at the rate of 250 to 300 miles in 24 hours—taking with us every desirable necessary of life for the preservation of health, activity, and personal prowess, so that when we meet the enemy we shall enjoy every desirable advantage in every conflict, in most of which we cannot but be successful; and in place of the usual campaign of three, six, or twelve months of distressing service, we may reasonably calculate on being conveyed, with every desirable supply from the central States to the frontier, in the short space of fifty or sixty hours' time, and of meeting and beating the invading foe, and returning to our homes in a few days, or at most a few weeks more. Hence the great utility of the proposed railroads in a state of war; and then, on the return of peace, when our sixty millions of dollars worth of fortifications, and armories, and arsenals, and ships-of-war, are worse than useless for any of the purposes of peace, and a great and constant expense to repair and replenish them in order to hold them ready for another war; then our railroads, taking, as they must take, precisely the direction that the commerce of our country takes, from the seaboard to the central western States, will, when turned to commercial purposes, produce a revenue to the States that own them that will be more than sufficient to replace, in seven years' time, every dollar expended in their construction, and forever thereafter produce a revenue sufficient for the support of all the State governments, and to pay for the education of every orphan child in America. The proposed railroads will do more—they will form ligaments of union more powerful than bulwarks of adamant, or chains of iron or gold, to bind the States together in perpetual union. In designating the military men of the central States of Tennessee and Kentucky as the disposable force of the nation, we have reference to the fact that this force is rendered disposable by the central position of these two States—they having no frontier to defend; while the forces of all the other twenty-four States are rendered local forces, and not disposable, by reason of their being all border States—the boundary of each extending to the frontier: and, therefore, having no frontier of their own to defend, they are thus rendered local, not disposable.

14. *Organization of the regular forces and operatives to be intrusted with the location and construction of the work.*

One major general; one adjutant general, with seven assistants; two brigadier generals; seven surgeons, with twenty-eight assistant surgeons; and twenty-eight chief artificers or scientific mechanics; seven regiments, each regiment to consist of one colonel, two lieutenant colonels, four majors, one adjutant, and one quartermaster, two sergeant majors, and two quartermaster sergeants, with ten companies: each company to consist of one captain, two first lieutenants, two second lieutenants and two cadets, with one quartermaster sergeant, one orderly sergeant, four sergeants, four corporals, two musicians, ten artificers, and eighty private soldiers. The general, field, and staff officers, with the captains and first lieutenants, to be taken from the officers of the engineers, topographical

engineers, artillery, and infantry now in service; officers of established reputation for professional talents, experience, industry, economy, and exemplary habits, and to have the pay and emoluments of mounted dragoons, with 50 per cent. additional pay, while actually employed as engineers, superintendents, or operatives, upon the location or construction of the work.

15. *Location of the proposed railroads.*

The location must embrace the *nearest and best routes*, commencing within the two central States of Tennessee and Kentucky, and extending to the seven grand divisions of the seaboard and northern frontier, as above suggested; to be ascertained, particularly through the mountainous regions, by a series of topographical surveys, and finally decided on and established by a board to consist of a general and four to six field officers, upon whose decision the major general commanding upon this service should have power to act: to approve or disapprove the decision of the board, upon the same principles that the President is authorized by the Constitution of the United States to approve or disapprove an act of Congress.

These surveys will produce an immense mass of mineral, geological, and topographical information, of great value to the States and the Union, and of indispensable utility to every member of the army and militia of the nation who aspires to that employment in the national defence which leads to the true fame of a citizen soldier—information tending to develop the military and physical resources of every State and district preparatory to a state of war, and of essential benefit to the people of every class during a state of peace.

16. *Operations in the final construction of the work.*

Each one of the proposed routes to be placed in charge of a colonel, who will superintend the construction of the work; and for the prompt and convenient accomplishment of every part of the work, each route will be subdivided into *ten sections*, and each section placed under the immediate superintendence of a captain, to be assisted by the whole of the subaltern officers, non-commissioned officers, artificers, and privates of the company, with as many volunteer artificers and other operatives as will be sufficient to insure the completion of each section in from four to five years after the location of the work, which may be accomplished in one year; so that when one section of sixty miles in extent is completed, the whole work will be quite or nearly finished, with the exception of that which is unavoidably located over a mountainous country. The completion of the mountainous sections may be hastened by such increased means as the exigencies of the service shall demand. The simple process of carrying on such a work necessarily increases the *means and facilities* of its progress and speedy accomplishment. Thousands of our young men, ignorant of every operation upon the work, will soon become able operatives. To the regular army we should have the power to add every scientific *mechanic, artificer, and able-bodied willing laborer*, to be employed as *volunteers*, principally within the limits of the States where the sections of the railroads on which they are to be employed, respectively, are located and constructed, so that the services of all may be near their places of residence. We shall thus call into action and usefulness that class of American genius which would otherwise, to a great extent, languish and fall into the whirlpools of vice or imbecility for want of employment and judicious direction—that genius which is found in the learned professions, in all the walks of fashionable life, in the pursuits of agriculture, commerce, and the mechanic arts, as well as in the haunts of dissipation and idleness; whose votaries may indeed often too truly say, “We are idle because no man hath given us employment.” By these idlers, whose employment would save them from misery and ruin, and render them valuable citizens, and enable them to render their country invulnerable in war and enrich it in peace—aided by the enterprising young men which every section of the republic is capable of affording for the proposed great work, and arming with the irresistible weapons of

industry and enterprise necessary to enable them, in obedience to the sublime mandate of Holy Writ, "to replenish the earth and subdue it," and render it fruitful, that it may multiply the benefits and blessings which it is capable of yielding to man—the proposed work will be speedily accomplished.

17. The hidden wealth which the progress of the work will disclose, added to the vast supplies of materials for construction, for transportation, and for food and raiment for the operatives upon the work, and for commerce—supplies, a considerable part of which every year waste away among the interior sections of the western and middle States for want of a cheap conveyance to good markets, such as the proposed railroad will afford—will contribute much towards the completion and final profitable employment of the work; supplies that would every year be augmented by new improvements and by encouraged industry, until they would far surpass the immediate wants of the great and increasing influx of population and operatives upon the public works and frontier; and, on the completion of the work, these constantly increasing supplies would be poured into the improved channels of cheap transportation and profitable commerce, gradually swelling the profits of both, as the millions of tributary rills and rivulets expand the mighty river into whose bosom they pour their liquid treasures. It is believed, moreover, that the construction of the proposed railroad through the southern, western, and Atlantic States would not fail to create the means for the speedy completion of all the lateral branches required for every State and seaport, by multiplying among us experienced engineers and scientific mechanics, with habits of industry and enterprise; giving to all classes of the community profitable employment, calculated to render them independent in their domestic affairs, respectable and happy in peace, and formidable in war, while the money expended would be kept in a healthful state of circulation among the farmers, merchants, and mechanics of our interior settlements, in place of its being carried off to enrich foreign merchants, or to form every year at home a new bone of contention between the votaries of the spirit of party, such as go all lengths for party men, regardless of the true interests and honor of the republic. And when, during a state of war with nations surpassing us in naval strength, we find ourselves compelled to abandon the ocean, and be deprived of our foreign commerce—the inevitable consequence of a war with any of the strong powers of Europe, without first supplying ourselves with a fleet of steamships of war, as well as floating batteries and the proposed railroads—these roads, even while occasionally employed in the transportation of troops from the central States to the south, will take return cargoes of southern products, such as sugar, cotton, oranges, and lemons, from the southern to the middle and northern States, from whence they will bring return cargoes of the numerous products and manufactured articles of the northern and central States needed in the south—an interior commercial intercourse by which the privations of our foreign commerce would be remedied, and many of the evils of war removed, and all others greatly mitigated. Indeed, the completion of the proposed railroads and floating batteries your memorialist believes would soon effectually prevent the recurrence of war, so long as the United States shall see fit to confine their views and national policy to the *magnanimous principle* of defensive war; as the proposed means of national defence would give a degree of available strength, both physical and moral, that would render the peril of an attack a perpetual source of terror to our evil-disposed neighbors, and consequently *moral strength and security* to our beloved country.

18. It is proper *in a state of peace to prepare for war*. The wisest statesmen in all civilized nations have acted upon the principle here suggested. It is time for us to inquire what would be the consequence of our receiving the unexpected visit of a large fleet of steamships, armed as the French fleet lately in the harbor of Vera Cruz were, bringing in the mouths of their cannon an unexpected declaration of war. Much as we may rely on the unsurpassed chivalry of

our volunteer corps, such a visit could not but be attended with incalculable mischief, without the means of defence here proposed—means of defence which will enable us to march by land from Tennessee and Kentucky to Buffalo, New York, Philadelphia, Baltimore, Norfolk, Charleston, Savannah, St. Augustine, Pensacola, Mobile, New Orleans, or Texas, from 200,000 to 500,000 men in the short period of three days' time! This rapid movement would have been very desirable, as it would have saved millions of money and thousands of valuable lives in our former wars, and would have been very essential to our security against a land and naval attack when we had no reason to apprehend an invasion by fleets propelled by steam power. But now that we know many of the most warlike nations of Europe are busily occupied in the work of preparing steamships of war, we have no longer a choice in the issue whether we *must* or *must not* prepare the means here proposed for defence against the improved elements of destruction which we know our neighbors hold in readiness to employ against us. We must lay aside our old obsolete military books of the last century, such as we have borrowed from England and France, and we must profit by the lights by which the present age, the present year is illuminated, and prepare to defend ourselves by the agency of this mighty power, by which the invading foe will inevitably attack us.

19. Ancient and modern history is replete with evidences of the wisest of governments having promptly availed themselves of the use of every description of *weapon* deemed to be most formidable in war, as well as of every kind of *power* applicable to the purposes of rapidly wielding armies and munitions of war, as soon as practicable after their discovery. We need only advert here to some few discoveries which, trifling as the first and third may seem, were deemed sufficient at the time of their discovery to merit the attention of men and monarchs of profound wisdom and genius.

1st. When the commanders of the armies of King David reported to that veteran monarch that they had sustained heavy losses in their operations against the Philistines, in consequence of their having employed in battle the bow and arrow, David promptly gave orders to his commanders to avail themselves of the discovery of this then formidable weapon, and make themselves and their men acquainted with the use of it, "so as to place them on an equal footing with their enemy."—(See the "History of the Bible.")

2d. When in the fourteenth century an obscure monk of Germany discovered gunpowder, with some of its uses in war, all the other nations of Europe that were blessed with wise rulers hastened to avail themselves of the discovery—a discovery which ere long induced all the civilized world to change their unwieldy weapons of war for fire-arms; gradually laying aside their war chariots armed with scythes, their battering-rams, with their coat of mail, and most of their personal armor.

3d. The use of wheel carriages on improved roads added more than twenty-five per cent. to the efficiency of an army, by enabling it to march one-fourth further in a given time, and by carrying with it a more ample supply of artillery, ammunition, and subsistence, prolonging the period of active operations, and occasionally taking the enemy by surprise, as, by the increased celerity of his movements, Napoleon took the enemies of France by surprise in his first campaign into Italy.

4th. All civilized nations speedily availed themselves of the discovery of the magnetic needle, with the inventions and improvements in ship-building, the use of sails, &c. Many of the discoveries here alluded to, however, though they contributed to facilitate the movement of troops and munitions of war, excited little or no interest at the time of their discovery compared with that of the application of steam power to ships and other vessels, and to vehicles of land transportation on railroads. In these last discoveries we may well be allowed to speak in the language of poetry, and say that—

"Steam power was almighty in its birth;"

while gunpowder, fire-arms, wheel carriages, and all former improvements in marine structures, though partially known and in use for centuries past, have exhibited little or nothing beyond their now apparent state of infancy until within the last and present century. Even now no civilized nation can boast of any discovery or improvement in fire-arms, gun-carriages, or in naval architecture in anywise calculated to be of any *peculiar advantage* to any one nation over another nation; while these developments of steam, with floating batteries and railroads, are calculated to render a nation, in the position which we occupy, at least ten times more formidable in a *war of self-defence* than in an *offensive war* against nations of equal numerical strength, and provided with the means here proposed. All the discoveries above referred to in the science of war have, however, contributed much to ameliorate the condition of nations and of armies in their conflicts and controversies, and greatly to lessen the evils of war. The greater the improvement in this awful and sublime science, the less calamitous and the more humane have been the results of military operations, wherever the contending parties were equally acquainted with the progressive improvements, and had equal or nearly equal means of profiting by them. If these propositions are correct, (and history proves them to be strictly true,) where, it may be asked, where must our improvements in the science of war, dependent on steam power, terminate? The wise and the good who have long cherished the prospect of a blessed *millenium* will readily answer the question.

20. Your memorialist had long cherished the hope that some patriotic statesman of military mind would be found at the head of the War Department, able and willing to bring the subject of his system of national defence before the President of the United States and the national legislature; and in this hope he has freely and frankly submitted to several of the heads of that department his views upon the subject at different periods during nearly seventeen years past, until he received from Mr. Secretary Cass the most irrefragable evidence that the official communications and reports of your memorialist were either misunderstood, disregarded, or disapproved. Nevertheless, assured as he has constantly been of the practicability, propriety, and necessity of such a system of national defence, and deeming it to be a matter of *discovery, invention, and improvement* in the art of war, which should be discussed with the same freedom as any other discovery in the useful arts, your memorialist, as the author and inventor of the proposed system, has addressed himself freely to private as well as public men of several different nations and of all parties, and has received in return, from men of the highest attainments and unimpeached and unimpeachable patriotism, full and cordial concurrence in his every view hitherto presented in favor of his system of national defence here set forth and explained. Far from being discouraged at the opposition of three honorable Secretaries for ten years in succession, he has learned from that opposition that the War Department of the United States republic is rather a theatre of *executive action* upon political matters *already settled, enacted, or ordered*, than upon *new discoveries, inventions, or improvements in any branch of the art of war*. He could not but persevere, therefore, in his humble efforts to render his country some good service *in peace*, as he had done *in war*; convinced as he is that his system soars above the pestilential atmosphere of the *evil spirit of party*, as it is a system of national defence designed to impart benefits and diffuse blessings alike throughout every State and Territory of the republic and upon all parties.

The oath of office taken by your memorialist, requiring him to serve the *United States, (not a party,)* requires him to act and speak in accordance with the rules and articles of war. He has always held himself ready to *risk his life, his bread, and his fortune*, for his country; and he has the happiness of knowing that he has risked his life for her often—hundreds of times. His oath of office does not restrain him from speaking frankly and truly in the vindication

of his motives, his conduct, his honor, and his system of national defence. To withhold his views upon an occasion of this kind, indeed, would be virtually a violation of his oath of office, which requires him, *as a primary duty, to serve the United States honestly and faithfully against their enemies or opposers whomsoever*; and he could not conscientiously comply with this oath, without submitting to the national legislature every section and every paragraph contained in this memorial. He feels conscious that he is right. His enemies will not hesitate to admit that he is either *right* or *wrong*. If any member of the national legislature believes him to be wrong, he entreats that member to institute any, the most rigid, scrutiny into the whole of the views here presented by your memorialist. He thus respectfully solicits his friends, and fearlessly challenges his enemies, to put him in the wrong, by proving his system of national defence to be either unnecessary or impracticable. But if he is deemed to be right in the foregoing views, showing that his system is indispensably necessary, and that its accomplishment is practicable, at the expense and within the period of time here suggested, surely no time should be lost in carrying into execution this system of national defence. As it regards the treatment he has received from the last three heads of the department of war, personally, he has nothing to say; having, ever since he entered the public service, acted upon the principle that

“The real patriot bears his private wrongs
Rather than right them at the public cost.”

Your memorialist desires no greater triumph over his *weak* or *wicked* calumniators, nor any other atonement for past injuries, than the triumph of truth that must result from a full and perfect examination of his past life and services; and more especially *a critical comparative review of his services in Canada (approved by a Madison)—and his services in Florida (condemned by a Jackson)—and more especially of his system of national defence, approved by a Seward, a Cannon, a White, and a Lumpkin*, compared with the services and system of the *party men* opposed to your memorialist.

21. The discovery, by Oliver Evans, of that development of steam power by which the locomotive and other vehicles of land transportation are propelled upon the railroad, and by which the movement of large armies, which may be hastened from twenty-six miles, (the day's march of Napoleon,) to three hundred miles in one day; and the discovery, by Robert Fulton, of that kindred development of steam power, by which our rivers and lakes have been covered with floating palaces and warehouses, surpassing in the velocity of their movement anything before seen upon our waters—making an easy conquest of the previously unsubdued current of the mighty Mississippi, and now proudly encountering in triumph the mountain wave of ocean; as these discoveries were the result of previously known developments of steam power, in its application to mill and other labor-saving machinery, suggesting to Evans and Fulton the great *principle* upon which their success was known to depend; so it must be obvious to every man of military mind, and to every scientific mechanic, that the discoveries of these two great public benefactors must necessarily form the basis of the system of national defence which your memorialist here offers to Congress. Oliver Evans and Robert Fulton were, until a few years before their death, denounced by thousands of *learned theorists* as *eccentric visionary* men. The same class of censors have honored your memorialist with similar epithets. He has had the satisfaction, however, to learn from some of those who thus denounced him that they have since seen their error, and are now among the true believers in the feasibility, value, and importance of his system. He adverts to this fact, here, only to justify or excuse what he deems it to be his duty to say in his own vindication, and in reference to his own past public services; because

he can refer to no historical work or biographical memoir containing any account of his public services in the war of 1814, excepting such as have been distorted by malignity or by ignorance. He is therefore constrained to say, as an act of justice to himself, that he is the only general officer now living, who, as commander-in-chief of a division, or separate army, or detached corps, ever achieved a victory over any British army, upon any part of the Niagara frontier, in the war of 1814; that he had the good fortune to command the division from which his beloved Major General (Brown) had been taken, by reason of a severe wound, on that frontier, in August, 1814, during twenty-three days of which time your memorialist was actively engaged in battle, and in a brisk cannonade and bombardment, and other severe conflicts with the British army under Lieutenant General Drummond. In the principal battle, the lieutenant general acknowledged a loss of nine hundred and five officers and men killed, wounded, and missing, with a similar loss of nearly *six hundred* in the several other conflicts. During twenty-two days of the time, there were but few hours, from daylight in the morning until dark in the evening, in which the British cannon shot and shells did not present to your memorialist the most instructive exhibition of every variety of *effect* of which a well-directed cannonade and bombardment upon a very slightly and partially fortified camp, of which an unfinished bastion and block-house formed the only tolerably fortified angle, could possibly present. In that long conflict—in which the British forces were reported to amount to 4,200, principally regulars, and the United States forces to 2,500, near one-fourth of which were New York and Pennsylvania volunteers under General Peter B. Porter—your memorialist is convinced he had a better opportunity than any other general officer of the United States army ever had during the war of being thoroughly acquainted with the effect of the enemy's *shells* and *cannon shot* upon our stone-masonry, earthen traverses, embankments, or breast-works. He had previously witnessed at Fort Meigs, and on the river St. Lawrence, as well as upon Lake Erie, in the British and United States ships-of-war, three days after Perry's glorious triumph, the effect of the enemy's and our own cannon shot upon block-houses, ships-of-war, and other vessels, as well as on other means of defence. The investigation of these results of some of the most important conflicts between the United States and British troops, in the war of 1813 and 1814, added to a careful attention to the theory and practice of gunnery for several years prior to the war, with much attention to the subject since, warrants your memorialist in speaking somewhat confidently, as he has, upon the various bearings and tendencies of cannon shot and shells on floating batteries, steamships of war, forts, and other means of attack and defence of seaports; and of railroads for the prompt movement of re-enforcements, as embraced in his system of national defence here set forth and explained. For further particulars in reference to the various conflicts referred to in this article, your memorialist respectfully refers to the officers whom he had the honor to command in those conflicts: among the most meritorious of whom are Paymaster General Towson and Adjutant General Jones, now on duty at Washington city. The names of all others will be found by referring to the adjutant general's office. And to show in what estimation his conduct was held by the Executive and national legislature, your memorialist takes leave to refer to the joint resolution of December, 1814, by which he and the officers and men of his command were honored with a vote of thanks, and the President authorized to present to him a gold medal. He received also from the legislatures of the great and patriotic States of New York, Virginia, and Tennessee, similar resolutions of thanks, and from each a gold-hilted sword of honor. With these magnificent tokens of high approbation of his conduct, your memorialist could not but feel himself in honor and in duty bound to exert his best faculties to *serve his country faithfully in war and in peace*. With these impressions, he respectfully offers to Congress his present system of national defence.

22. Your memorialist is convinced that the proposed means of protection constitute the first and only discovery known to man, whereby a nation situated as we are, and acting upon the magnanimous principle of *self-defence*, can, without any doubt, at a moderate expense, and by means that will in a few years of peace repay all the expense of the work, hold in their own hands, forever, the incontestable issue of any possible *war* upon her seaboard or domain, waged by any nation, or by any such combination of empires or kingdoms as have once dared to assume the appellation of "*holy alliance*;" and that any nation of our numerical strength and military resources availing herself of the discovery, may, if she be just and true to herself, safely assume the attitude of honest defiance towards the armies of Europe, if not of every quarter of the globe: while the most warlike nations, neglecting the use of steam power, with railroads and floating batteries, will be found wholly unable to maintain their independence. In this view of the subject, it presses itself upon our attention not as a matter of choice, but as a work of absolute necessity—as a *measure of self-preservation*.

23. The *constitutionality* of the proposed system of national defence would be left untouched by your memorialist, but for the veneration he entertains for that sublime and sacred instrument bequeathed to us by our fathers of the revolution, added to the oath he has taken to support that inestimable charter of our free institutions. He would not willingly be deemed capable of urging or soliciting the adoption of any measure not in accordance with the Constitution of the United States; and having, in common with each one of his fellow-citizens, an indubitable right to judge for himself upon all questions arising upon the different provisions of that most perfect charter of human freedom and self-government, without confiding too much in the opinions of statesmen laboring under the despotic influence of *party* discipline—a despotism ever operating upon the hopes and fears of all who tamely submit to the *tyranny* of such a discipline—the views which follow are respectfully submitted. The 8th section of the 1st article of the Constitution of the United States authorizes Congress to "*declare war*," and "*to raise and support armies*," and "*to provide for calling forth the militia to execute the laws of the Union, to suppress insurrections, and repel invasions*;" and also "*to provide for organizing, arming, and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States, respectively, the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress*."

Inasmuch as these important provisions of the Constitution cannot be carried into effect without roads, and the effective defence of the republic *is a work upon which our national existence depends*, the transcendent importance of this work calls aloud for the very best roads; and railroads being immeasurably the best for all military purposes, they are deemed to be as fully authorized by the Constitution of the United States as the best of rifles, or the best of cannon, or gunpowder, or flints, or forts, are authorized, as will be seen by the last paragraph of the above-mentioned 8th section of the Constitution, which, after particularizing the specific powers granted to Congress, as enumerated in that section, concludes with the words which follow: "*To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, vested by this Constitution in the government of the United States, or in any department or officer thereof*."

A wise people, with the experience which the framers of the federal Constitution had acquired in the triumphant revolutionary conflicts through which they had then recently passed, could never have authorized a declaration of war "*to repel invasion*," without making provision for the best of means for insuring a successful and glorious termination of the war: that provision was accordingly made in the above recited authority given to Congress, to make all laws which shall be necessary and proper for carrying into execution "the fore-

going powers, vested by this Constitution in the government of the United States, or in any department or officer thereof." By this comprehensive grant of power the national legislature has passed laws for supplying the land and naval forces with many things not expressly named in the Constitution. Hundreds of military roads have been made by the troops and otherwise at the expense of the United States; first, for the purpose of facilitating the march of the troops to and from the places of their destination, at the rate of twenty to twenty-six miles a day, when, without such roads, they could not have marched a quarter of the distance without leaving behind them their cannon and baggage-train; and, secondly, for the use of the constantly-moving families and other travellers to the continually-expanding border of the republic, by which simple process thirteen new States and near thirteen millions of inhabitants have been added to the *old thirteen States* of the revolution in the last sixty years. Who ever pronounced these miserable roads to be unconstitutional? These roads seldom cost more than at the rate of from fifty to one hundred dollars per mile; and yet these poor roads contributed more to the immediate benefit of the community at large, during a period of peace, than any of our fortifications, which cost from *one to two millions* of dollars each. Your memorialist is unable to perceive upon what ground a military road, upon which our troops can be marched three hundred miles in one day, can be unconstitutional, when roads upon which they could march but twenty-six miles in a day were constitutional and proper, (more especially when all are made by the troops themselves,) notwithstanding the great difference in the cost of the two kinds of military roads here alluded to. As it is obvious that the military railroads will enable our young warriors of the central and western States to fly at the rate of three hundred miles in a day to meet the invading foe, the constitutionality of such roads, as "necessary and proper means for repelling invasion," cannot but be admitted by all parties, convinced, as they must be, that we are destined in another war with any European nation to be attacked by fleets propelled by steam power. But if, as your memorialist respectfully asserts, our seaports cannot be defended against an attack by foreign armies, with the co-operation of fleets propelled by steam power, who can doubt the absolute necessity of the proposed railroads and floating batteries? If, indeed, then, they are indispensable, and our country cannot be defended without them, they are strictly constitutional, as the most rigid constructionist will admit. To make use of our common bad roads for marching our volunteers and other troops from the central and western States to our seaports in a state of war, or to continue the use of sails, without steam power, to meet an invading foe with large fleets of steamships of war, would be as unavailing and as unwise as it would be to attempt to extinguish by water carried in a nutshell the flames by which thousands of our houses are doomed to be enveloped in the course of a war when destitute of the proposed means of defence, while possessing the power to obtain the best of fire-engines.

24. The apprehended expense of the proposed work constitutes the principal objection advanced by any statesman, or by any man of military mind, whose opinions have come to the knowledge of your memorialist. To this objection it may be answered:

First. That the apprehended appropriations to meet the expense will be no more than eleven millions of dollars a year for a period of six years, provided the work is done by the army of the United States, as heretofore suggested.

Second. The employment of the army upon the work will be to the officers and men, and to the youth of every State and district through which the work will extend, the best of all possible schools to prepare them for the defence of their country; as the officers and men so employed will have the proud satisfaction of knowing that every day's labor in this essential work of preparation will contribute to increase their moral and physical capacities for usefulness and

domestic happiness in peace, and for a glorious triumph over the invading foe in war.

Third. In exhibiting the cost of this system of defence, it is gratifying to find that of the \$66,000,000, which is the estimated amount required for the seven railroads from the central States to the seaboard and northern frontier, with five floating batteries for the Mississippi river at the passes, and below New Orleans, and five others for the defence of the harbor of New York, more than sixty-three millions of that sum will be expended for materials and work which the interior of the United States will afford.

Fourth. The most costly material required for the work will be bar-iron for the railways, and sheeting for the sides and tops of the floating batteries; of this article, not less than 500,000,000 pounds will be needed. This quantity, at four cents, will amount to twenty millions of dollars.

Fifth. For supplying the whole of the iron, it is proposed to erect at convenient places near the site of each one of the seven great railroads *a foundery and a rolling-mill*, for the manufacture of the iron required, upon the same principle that armories are established by the United States for supplying the army and navy and the militia with cannon and small arms. By these works ample supplies of the best of iron may be obtained in season to complete the railroads and floating batteries in the time here suggested.

We shall, in this way, lay open to the individual enterprise of the people of the United States rich mines of wealth hitherto but little known; and we shall moreover relieve ourselves of the reproach to which we have for many years been subjected—the reproach of sending to Europe and expending there many millions of dollars for iron, whilst most of our States abound with inexhaustible supplies of this valuable metal equal to any in Europe.

25. The great revolution which steam power has produced in its application to everything that is wafted upon the sea and that rolls upon the land, applicable to the attack and defence of seaports, leaves our country absolutely *destitute of the means of defence* indispensably necessary to the protection of our seaports against any nation or community of men, or pirates capable of attacking us with a respectable fleet of steamships of war, armed with the improved battering cannon of the largest calibre, without floating batteries of sufficient strength and number to enable us to lock up our seaports and railroads extending from the central and western States to the principal seaports, for marching our disposable force and munitions of war of the central and western States, at one-tenth part the expense and one-tenth part of the time that their movement on our present bad roads would cost.

26. The floating batteries here recommended constitute the most sure and economical means for the immediate defence of our seaports in war; and when aided by the proposed railroads, in the rapid transportation of troops and munitions of war from the central and western States to the principal seaports of the Atlantic, southern, and northern States, aided at sea by steamships of war, we shall thus render our means of defence complete and impregnable in war. And on the return of peace, when all other expensive means of defence, such as fortifications, armories, and fleets propelled by wind and sails are useless, then our floating batteries and railroads, turned to commercial purposes, will contribute to deepen our ship channels and to the improvement of our seaports, and afford facilities to our interior commercial intercourse, which it is believed will replace every dollar expended in carrying into effect this system of national defence in from seven to ten years.

27. The floating batteries and railroads, embracing the system of national defence here recommended, which will cost not more than eleven millions of dollars a year for six years, will, it is confidently believed, by the simple process of its construction, contribute more to qualify the army, and the young men of the United States employed upon the proposed floating batteries and railroads, for

active military service in the national defence, than they could possibly be qualified by the expenditure of double the estimated amount of the work paid for giving each one of them a complete military education, according to the system pursued at the Military Academy at West Point; as in that system the theory of the art of war alone is acquired, and much of that *mere theory* is rendered useless by the revolution which steam power has produced in all that relates to the movement of armies and fleets, and the attack and defence of seaports; whilst in the system here recommended, the young student upon the floating battery, as well as upon the railroad, is enabled, from the first moment he takes in hand his book to study the theory, at once to combine with it the practical science and manual labor of his profession; and when, at the end of four or five years, he graduates and obtains his discharge, his mind, limbs, and body would be alike improved and invigorated by his having learned *how to make and how to wield*, and having actually assisted in making and wielding floating batteries and vehicles of land transportation on railroads, with every other preparatory means for rendering them formidable in war and profitable in peace. This will afford him the happiness of knowing that he has rendered his country much useful public service for the public instruction which will enable him ever after to be in the highest degree useful to his country and his family, in war and in peace.

28. With the floating batteries and railroads here recommended, we can fearlessly and truly say to all Europe, and to all the world, "*We ask of you nothing but what is right, and we will submit to nothing that is wrong;*" whilst, without the proposed or some such system of national defence, such a declaration might be considered as pure gasconade; as, without floating batteries and railroads to lock up and promptly re-enforce our seaports when menaced by an enemy, it would be in the power of any one or two of the great nations of Europe (with two of whom we have boundary questions to settle) to enter any one or more of our principal seaports, and destroy the richest of our cities in the course of any day or night in the year; and in doing so, to damage our commercial establishments to the amount of more money and property than would thrice defray all the cost of the proposed system of defence.

29. The opinion has been expressed that these railroads will, during a state of peace, produce a revenue that will replace the money to be expended in their construction in the course of seven years after their completion. But should it be twenty, or even forty years, before their annual revenue is found adequate to reimburse the money expended in the construction of the work, this delay will tend to do no wrong or injustice to our immediate or remote posterity. They cannot fail to enjoy, as much we can enjoy, the benefit of our labor for *our* and *their* protection and prosperity. But the great question upon which we are now to act is, not whether we have or have not a right to tax our posterity with a heavy debt for a work that will certainly be of great value to us, and which is destined to be, in all human probability, *still more valuable to them*; but the true question is, whether it is not our imperative duty to do whatever is *obviously necessary and proper* to secure to ourselves, and also to our posterity, the means of preserving to each and all so deeply interested the blessings of that *liberty and independence* secured to us by our fathers of the revolution, in the achievement of which a great national debt was contracted for us to pay—a debt which we have most gladly and gratefully paid. And have we not good reason to believe that our immediate posterity will as gratefully pay any such debt which we may deem prudent to contract, to provide for their use and protection, as well as our own, a system of national defence, without which our and their liberty and independence would be left at the mercy of whatever nations of Europe may see fit to hold in their own hands "*the dominion of the sea*?" This will be attempted, without doubt, by the great maritime nation who first provides for herself a fleet of some fifty or a hundred

steamships-of-war, with floating batteries and railroads for securing her own sea-ports and her interior. This is a measure, however, more likely to be undertaken by some future combination of empires, arrogating to themselves, as the enemies of France did in the years 1814-'15, the title of "Holy Alliance," than by any one nation.

30. Our unnatural mother, England, who has had the address to subsidize most of her neighbors, and to force others to sanction her pretension to *the dominion of the sea*; and for half a century past to hold in her own hands, amid professions of peace and good will towards us, near a third part of our greatest eastern border State, and to hold several of their and our border savage nations ready to take the scalps of our frontier citizens; that enlightened nation, who has shed more blood than any other, if not more than *all* other nations, to secure to herself the *dominion of the sea*, has, it is believed, at this moment, among us organized bands of *spies* and *pioneers*, assuming to themselves the plausible character and vocation of "advocates of human freedom," more familiarly called "abolitionists." That this same England will, in due season, avail herself of her *newborn abolitionism* to secure to herself some favorite scheme of a foothold near us, to the northeast or south of us, or to pay us for our having twice beaten her, and more especially having, with our little giant navy, taken from her the glory of her long contested *dominion of the sea*, we can have no doubt. Without railroads and floating batteries, such as are here recommended, with steamships of war, *England's banner of abolitionism* may ere long be planted in Louisiana, and in every other border State upon our seaboard, from Sabine bay to Eastport, Maine. Thus may we soon behold England openly attempting by force to accomplish what her spies and pioneers have long been secretly employed in preparing and hastening, a tragedy of blood and desolation, the elements of which were principally provided and brought hither from Africa, within the last two centuries, by the outrages and avarice of this same England, in her efforts to monopolize the freedom of the seas. The incendiary fires have already been lighted up at Charleston, South Carolina, and Mobile, Alabama, and perhaps some other cities of our southern and eastern border can testify. The system of national defence here recommended will enable us effectually to guard against the apprehended catastrophe. It will do more. It will, when the proper time arrives, enable us effectually to fulfil the apparent destiny by which an overruling Providence has decreed that the African savages should, by the simple though often abused process of the slave trade, with the long continued pilgrimage of slavery which they are undergoing, (a slavery marked as it has been here, ever since the reign of England ceased among us, with a high degree of humanity and benevolence,) when the proper time arrives, namely, whenever, in the next century, our own *caste and color* shall have increased so as to amount to *two hundred millions* of free white inhabitants, then it is believed that our statesmen will see clearly the propriety of preserving every acre of the national domain for the support of our own *caste and color*; then shall we plainly see, and cheerfully do what we can to fulfil, that apparent destiny—a destiny by which the supposed evils of the slave trade, and of the slavery of the Africans in America, shall eventually contribute to cover that benighted quarter of the globe with all the blessings of civilization and freedom. A consummation not more devoutly to be wished, than it is certainly to be accomplished within the coming century; unless, indeed, the great work is delayed by the lawless interference of the blind votaries of abolitionism, or by the apprehended incapacity of the African blacks for self-government. Be this as it may, our own United States republic of the coming century will, in all human probability before the middle of that century—say 80 or 90 years hence—have it in their power to make, for the first time since our political existence, a fair experiment towards the solution of the long contested problem, involving the question of

the utility of Africans when left alone as members of a free civilized community—the question upon which their possible capacity for self government necessarily depends; for we shall then be able to spare from our two hundred millions of free white population a fleet of steamships-of-war, with an army of missionaries and United States volunteers, for the instruction and protection of the numerous savages of Africa: the terms *protection* and *instruction* are here employed in connexion with each other, because these two great engines of civilization have always gone side by side, wherever the work of civilization has succeeded best. That complete instruction necessary to all the purposes of civilization and self-government, as we understand it, never was, nor ever can be perfected without *military protection*.

This navy and army of *protection* and *instruction* may be accompanied and followed by such detailed corps of the *instructed* blacks of our country as may be qualified to assist in the great work: these detailed corps to continue, with the consent of their owners, until every black in America shall find a *comfortable* and a *safe* home in the land of his fathers. Any other system of abolition would inevitably *delay* though it might not defeat the accomplishment of the great work of giving civilization and self-government to Africa, and of giving to the *United States republic* the glory of the achievement—of giving civilization and self-government to two quarters of the globe; first to America, and next to Africa. To secure to ourselves the *happiness, the imperishable glory*, of giving to America and Africa all the blessings of civilization and self-government, we have only to do that which we are now admonished by every dictate of the first law of nature to do quickly for our own preservation—that which we possess more ample means of accomplishing before the year 1846, than the patriotic people of New York possessed to enable them to complete their magnificent canal before the year 1826—namely, to locate and construct the proposed railroads and floating batteries; as by the simple operation of the execution of this work, we shall insure the instruction of all the young men of our country that may be necessary or desirable as engineers or scientific mechanics to teach millions of the youth of South America and Africa the art of covering *their country*, as we shall have covered *our country*, with these essential means of *national defence* and *national wealth*. The missionary, whose sacred duty it is to extend to every people the blessings of the Christian religion, may with perfect propriety himself learn to be a scientific mechanic and a practical engineer. He may thus add the attractive power of *practice* to *theory*; and to the sublime precepts of Holy Writ, and in teaching men *how to live* and *how to die*, teach them also how to preserve unto their country the things that belong to their country; and how to *defend* and *protect* the helpless women and little ones *confided to their care*, in obedience to the *solemn mandate* which should apply alike to each social and political union most dear to us, namely: “*Those whom God hath joined together, let no man put asunder.*” Such will be—such *must be*—a portion of the glorious results of our carrying into effect the proposed system of national defence. But if we neglect it until the crowned heads of Europe shall have leisure to prepare another holy alliance, with fifty to one hundred first-rate ships-of-war adapted to the action of steam power, we may, possibly in the next ten years, see our foreign commerce under the control of that holy alliance; and if we resist—and who will have the hardihood to say *we will not resist*?—we may be told by the vain diplomatists of that imperial combination of pirates—“Yankees! the holy alliance is graciously pleased to permit you, with your wives and children, to seek an asylum beyond the Rocky mountains.” Otherwise we must submit to the degradation of seeing all our seaports in the possession of the invading foe; or, of seeing our commercial cities battered down, without the possibility of our bringing to their succor sufficient force in time for their protection.

31. To obviate any such calamity as the foregoing views suggest as possible, your memorialist prays Congress to provide for the construction of the proposed

works. Or, should some previous experiment be desirable, he prays that he may be authorized by law to select and employ, under the authority of the President of the United States, such engineers and other officers, scientific mechanics, artificers, ship-carpenters, and laborers, as may be necessary to enable him forthwith to locate and construct, upon the principles and in the manner here stated, *one of the proposed principal railroads*—say that from Lexington, Kentucky, to Nashville, and thence to New Orleans; or the one from Louisville, Kentucky, via Nashville, to Mobile; or that from Memphis, Tennessee, to meet the one already completed from Charleston, South Carolina, and Augusta, Georgia, to Tennessee river. And also to construct three of the proposed floating batteries, viz: two for the harbor of New Orleans, and one for the harbor of Mobile; to be constructed under his direction, in accordance with the project here recommended, and under the immediate superintendence of such officers as he may select. And when the floating batteries and railroads here recommended are completed, armed, equipped, and manned, the said floating batteries and railroads to be subjected to a scrupulous inspection by such committee of Congress, and by such other public functionaries as may be authorized by Congress, or by the President of the United States: provided that no *military or naval officer* be selected for any such inspection, *but such as shall have been in battle and witnessed the effect of the enemy's cannon shot upon our works of defence*; to the end that by such inspection the precise *character, value, and utility of these works of internal improvement as means of national defence and national wealth, taken in connexion with each other, may be fully ascertained and certified.* Under such authority, with two regiments such as the foregoing organization contemplates, sustained by an appropriation of three millions of dollars a year, for three years, your memorialist pledges himself to complete in this period of time the proposed *railroad and three floating batteries*; which will serve as an experiment upon which the residue of the works here recommended may be safely undertaken.

32. Your memorialist having, at different times during the last seventeen years, submitted to the proper authorities of the War Department most of his views contained in the foregoing 30 sections, as will more fully appear from his official reports, (which he prays may be called for and taken as a part of this memorial,) he has thus repeatedly appealed to the War Department, but he deeply regrets to say that his appeals have been wholly unavailing. He now respectfully calls on every member of the national legislature who loves his country and her institutions to sustain his efforts in preparing for her a system of defence worthy of their fathers of the revolution, worthy of the Union, and of the Constitution which we all stand pledged to support. Your memorialist did not enter the service of his country for the mere selfish enjoyment of the *pomp and ephemeral honors of the field of battle*, (though he would not shrink from a comparison of his *services in battle* with those of any other United States commander now living;) his anticipated glory and great object have been to employ her means of defence, ample as they must ever be, so effectually as to convince her neighbors that *honesty is the best policy*, and that *defeat must attend their every act of invasion*; and thus to direct *the elements of war to the attainment of "peace on earth and good will towards men."* With these impressions he deems it to be an act of common justice to himself, his wife, children, and friends, that he should solicit the only *relief* to which a United States general officer, honored as he has long been with one of the highest commands in the army, and whose best efforts are ever due to his country's service, can with propriety claim. He claims to be *the author and inventor of the system of national defence* herein set forth and explained; he therefore prays Congress to confirm his claim by such *act or joint resolution* as in their wisdom shall seem just and right. And your memorialist, as in duty bound, will ever pray.

EDMUND P. GAINES.

NASHVILLE, December 31, 1839.

BUREAU OF TOPOGRAPHICAL ENGINEERS,

Washington, April 24, 1840.

SIR: I have the honor to acknowledge the receipt of your letter of the 17th instant, referring to this bureau a memorial of Major General Gaines, proposing a system of national defence, of which he enumerates, as an essential part, an extensive series of railroads. Upon these last, your directions are that I should submit an estimate of the probable cost.

The various routes enumerated by the general will be found in the 10th page of his memorial. According to his computation, they would embrace about 4,200 miles; are to be laid in double track; and would cost, on an average, \$15,000 the mile.

The routes are—

1st One principal railroad from Lexington, Kentucky, to Buffalo or Plattsburg, New York, with branches to Detroit, Albany, and Boston.

2d. One principal railroad from Knoxville, Tennessee, to Norfolk, Virginia, or Baltimore, Maryland, with branches to Richmond, Virginia, and Newbern, North Carolina.

3d. One principal railroad from Memphis, Tennessee, to Charleston, South Carolina, or Savannah, Georgia, with branches to Milledgeville, Georgia, and East Florida.

4th. One principal railroad from Louisville, Kentucky, to Mobile, Alabama, with a branch to Pensacola, Florida.

5th. One principal railroad from Lexington, Kentucky, *via* Nashville, to New Orleans.

6th. One principal railroad from Memphis, Tennessee, to the Sabine ridge, with branches to Fort Towson and Fort Gibson, Arkansas.

7th. One principal railroad from Louisville, Kentucky, or Albany, Indiana to St. Louis, Missouri; and thence to the Missouri river, north of the mouth of the Big Platte, with branches from Albany, Indiana, to Chicago, and from the northwest angle of the State of Missouri to the upper crossing of the river, Des Moines.

As the general has given no precise indication of the courses which these routes would pursue, or of that of their branches, I find it difficult to determine the method by which he has ascertained the whole distance. But, taking Tanner's map of the United States as a basis, drawing straight lines from point to point, without reference to the physical peculiarities of the country, and involving but once in the consideration those parts which may be common to more than one principal route or branch, I make the distance of the whole system equal to 5,260 miles.

This is a distance of air lines, and of course is much less than what would be the actual distance of the roads. Their windings and sinuosities would much increase that length, to an extent which I think may, with propriety, be assumed as equal to 20 per cent. and which would make the entire length of roads and branches equal to 6,310 miles.

Until surveys are made and the roads located, it is impossible to make an accurate estimate of the cost. But, in the absence of these, by reasoning from probabilities and from experience in cases somewhat similar, one may arrive at a result which may be considered as a probable minimum. The general reasons upon the supposition of a double track, throughout; but I doubt if this be necessary. A single track, with suitable turnouts, and double lines of some extent in particular localities, will probably be found adequate to all the objects of the roads. As the roads are intended for great speed as well as great weights, and are to be national roads, they must be made of great strength as well as of durable materials; and as they will cross the country in so many

directions, they will no doubt encounter all the causes of great expenses in such structures—rock excavation, deep-cuts, tunnels, heavy embankments, extensive bridges, &c.

Under these considerations, and after having, in addition to my own investigations and observations, consulted some of the most experienced and most eminent railroad engineers of our country, I find myself obliged to differ with the general in reference to probable cost. He states the average, on the supposition of a double track, at \$15,000 per mile. I cannot, consistently with my own views, state it at less than \$20,000 the mile, for a single track and its requisite accessories; and this amount I desire also to be understood as my opinion of a probable minimum.

Six thousand three hundred and ten miles, at \$20,000 the mile, will amount to \$126,200,000.

There is no doubt that many advantages may be taken of the railroads already made and being made by States and incorporated companies, in adopting them as parts of the major general's system, but one cannot say to what extent, until the same shall be shown by the surveys. If we suppose it, however, to be equal to 1,000 miles, it will reduce the cost before stated to \$106,200,000.

The objects of these various roads being to transport masses of troops and munitions of war with great speed and to great distances, means of transporting will have to be provided, and will also have to be under the exclusive control of the government, which last condition makes it necessary that these means should be owned by the government; they become, then, an essential part of government expense belonging to the system.

These means are locomotives and cars. A car that would properly accommodate 50 men with their arms and necessary baggage would probably not cost less than \$500. To transport 10,000 men, then, would require 200 cars. We will now suppose that to move these cars with the anticipated speed will require one locomotive to each train of ten cars; there must, then, be twenty locomotives, which, with the requisite tender to each, will not cost less than \$8,000 apiece. It will, therefore, be necessary for the transportation of 10,000 men to have 20 locomotives and tenders and 200 cars. This may be considered as an equipment for one of the principal lines; but as there are seven principal lines, and as each should be supplied with an equipment adequate to the transportation of 10,000 men, there will have to be, for the whole system of roads, not less than 140 locomotives and tenders and 1,400 cars. Applying to these the prices which we have stated, it will make the cost of the means of transportation equal to..... \$1,820,000
To which add the cost of the roads..... 106,200,000

And the whole will be..... \$108,020,000

I have, in the foregoing, supposed the plan to be practicable—that is, that railroads may be made in the several directions as required by the system; but it is proper to add that this is a point which cannot be determined except by accurate surveys.

Very respectfully, sir, your obedient servant,

J. J. ABERT,
Colonel Topographical Engineers.

Hon. J. R. POINSETT,
Secretary of War.

NAVY COMMISSIONERS' OFFICE, *April 25, 1840.*

SIR: The board of navy commissioners have the honor to acknowledge the receipt of the letter from the honorable Secretary of War to you, of the 16th instant, requesting your reference to them of the memorial of General E. P. Gaines to Congress, submitting a system of national defence, "for a report as to the practicability, expediency, and expense of the plan, so far as relates to floating batteries and other naval defences;" and, in compliance with your indorsement, respectfully state:

That in relation to the "expense," the board called upon the chief naval constructor for the probable cost of one of the floating batteries and a tow-boat, as described in the memorial, a copy of whose report is herewith enclosed. These estimates form the best data which the commissioners can furnish for ascertaining the aggregate expense which might be necessary to carry into effect the recommendations of General Gaines. No definite number is specified in the memorial, nor any other information given by which that number can be ascertained with any probable certainty; and no attempt has been made to supply the want of this information by conjecture.

There appears to be no cause for doubting that the approaches of an enemy by water to any of our cities and seaports might be prevented by the employment of a sufficient number of floating batteries and tow-boats, prepared, armed, and manned, as are proposed by General Gaines; and, consequently, that the plan is "practicable," provided the expense can be met and a sufficient number of men be obtained.

In considering the "expediency" of adopting the floating batteries which are proposed in the memorial, it is necessary to estimate their comparative efficiency with other means which may be provided, manned, and supported with an equal expenditure of money and an equal number of troops or other persons.

The board of navy commissioners, when presenting their views upon the general defences of the country upon former occasions, have expressed the opinion that, upon a subject so important and evidently requiring the best combinations of military and naval force, it was very desirable, if not indispensable, that it should be considered and reported upon by a board which should comprise officers of both branches of the service. This belief has not been changed by any subsequent information or reflection upon the subject, and consequently they can only offer opinions upon the relative advantages and disadvantages of the floating batteries and fixed fortifications, which are based upon facts that appear to be too well established or so obvious as not to be questioned.

The system presented in the memorial is intended "to provide for the defence of our seaports," and "to enable us to repel, by the agency of steam power, every invasion suddenly forced upon us by fleets propelled by steam power." To effect this object, the memorialist proposes floating batteries and attendant tow-boats, which he has described in very general terms, and considers them preferable to fortifications with cannon placed on the banks of rivers or inlets; because with such fortifications only it would be utterly impracticable to lock up a navigable river or inlet, or to arrest the movement of a fleet thereon. He also prefers the floating batteries to steamships-of-war, unless such ships should be prohibited from leaving the vicinity of the ports or harbors to which they may be assigned. From these general views it appears to be the intention of the memorialist that each and every port or harbor shall have at all times all the means for defence against a naval force which may be necessary to resist attacks until reinforcements can be obtained from the interior; and that no reliance is to be placed upon the concentration of these separate floating defences from contiguous ports for temporary purposes.

There can be no doubt that such a perfect system of defence would be very desirable, if it could be obtained with a proper regard to its cost and its de-

mands upon the population of the country. But if the probable expense of the construction and maintenance of the floating batteries and tow-boats which would be required, and the number of persons necessary for their advantageous use, are considered and compared with the resources of the country, reasonable doubts may be entertained whether an attempt to obtain complete security in this manner would be expedient.

That floating batteries of some kind will be necessary as component parts of the defences for several of our harbors is generally admitted, and it is believed formed a part of the plan of defence as proposed by the board which had that subject under examination shortly after the close of the last war for those passages to important points which could not be well and thoroughly commanded by the fortifications on the land.

One of the strongest objections which is usually made to fixed fortifications is, that they must of necessity await an attack, and leave the choice of time and circumstances to an enemy. The greatest advantage of a floating force over fixed fortifications consists in the greater power which they possess of choice of position, with facility and promptitude to meet in the best manner any form of attack with which any point may be threatened. All varieties of floating force are liable to greater danger from shells and hot shot, and require much larger amounts, in proportion to their original cost, to keep them in repair than fixed fortifications.

In considering the defence of a coast so extensive as that of the United States, and upon which there are so many positions which are important either for their commercial, military, or political relations, the Board of Navy Commissioners, when they refer to the probable nature and force of the attacks which may be expected from a naval enemy, and the physical, fiscal, and personal resources of the country to meet them, are led to the conclusion that many points must be left more or less exposed for many years; and that, while permanent arrangements are made for giving security to others in proportion to their importance, the best policy for the whole country will be to extend those movable defences which can advantageously meet an enemy at the greatest distance from his meditated points of attack, or be soonest concentrated to retard his progress, or to repel him from our shores.

This force, if composed of steam and ordinary ships-of-war, employed separately, or in combination, as circumstances may require, might, it is believed, be used (except at some few points) with at least equal advantage as the floating batteries which are proposed in the memorial, and would possess the further advantage of being able to meet and annoy an enemy in his progress, to concentrate where it should be most required, to retire, if necessary, before a superior force, and be held ready to take advantage of any accidents to the enemy, or of any mistakes which he might commit. Its powers would be active—aggressive if necessary, whilst that of the batteries proposed must necessarily be almost wholly passive and strictly defensive.

Without entering more particularly into the general subject of national defence, after a careful consideration of the employment of such floating batteries as are proposed in the memorial, the board are of opinion that, although a few such or similar batteries might perhaps be useful in particular places, it would not be expedient to adopt them generally as substitutes for fixed fortifications, or for a floating force which should be adapted to more extensive use and capable of quicker and more rapid combinations.

The papers are herewith respectfully returned.

I have the honor to be, sir, with great respect, your obedient servant,

C. MORRIS,

For the Board of Navy Commissioners.

HON. JAMES K. PAULDING,
Secretary of the Navy.

WASHINGTON, *April 22, 1840.*

SIR: I have read the memorial presented by Major General Gaines to Congress on the defence of the coast. A part of the system proposed by the general is the construction of heavy floating batteries, the probable cost of which with their tow-boats, you require me to state. It is difficult to form an opinion on the cost of vessels of such unusual dimensions as those proposed by General Gaines; and in addition to this difficulty there are no data given on which to ground an estimate, excepting length and breadth, but it is believed that the largest battery with her tow-boats will cost about 1,400,000 dollars, and the smallest about 700,000. This estimate includes copper-fastening and coppering, cables, anchors, boats, and water-casks, but does not embrace masts, spars, sails, armament, nor stores of any description.

I am, sir, respectfully, &c.,

SAMUEL HUMPHREYS.

Com. CHARLES MORRIS,
President of the Navy Board.

HO. REPS., EX. DOC. No. 5, 32d CONGRESS, 1st SESSION.

LETTER
FROM
THE SECRETARY OF WAR,
IN
Reference to Fortifications.

DECEMBER 11, 1851.—Referred to the Committee on Military Affairs, and ordered to be printed.

WAR DEPARTMENT,
Washington, December 8, 1851.

SIR: On the 3d of March last, your honorable body adopted the following resolutions:

"1. *Resolved*, That the Secretary of War be directed to report to this House, the second Monday in December next, on the subject of the land defences of the country, in which he will review the general system adopted after the war with Great Britain, and since pursued in regard to the permanent fortifications then deemed necessary for the national defence; and that he report whether the general plan may not now be essentially modified by reducing the number of works proposed to be erected, and by abandoning some of the forts now in progress of construction.

"2. *Resolved*, That the Secretary of War also report the number of fortifications which have been built, including those nearly completed under the general system, the number in process of construction, and the number not yet commenced, but proposed to be erected, and in such form as will conveniently show the States and Territories in which the several forts are situated, or to be located; when the work was commenced, when completed, or expected to be finished; the number and calibre of the guns mounted, or to be mounted, the estimated cost, the amount expended, and the sums yet required to finish or construct, as the case may be, each work respectively."

I now proceed to discharge the duty thus imposed on me.

On more than one occasion during the last war with Great Britain, the country had been exposed to serious misfortunes from the want of suitable fortifications at important points. Its capitol had been taken, and several of its largest commercial cities owed their preservation from the same calamity to the undisciplined courage of troops hastily assembled for their defence. It is not surprising, therefore, that at the restoration of peace, the attention of the government should be turned to the defences of the country.

In the year 1816 a board of engineers was organized by order of President Madison, charged with the duty of preparing a general system of fortifications for our maritime frontier; and, by a resolution of Congress, adopted in the same year, the President was authorized to employ "a skilful engineer as an as-

sistant" to this board. The appointment was conferred upon General Bernard, a distinguished officer in the French army. The board of engineers, thus constituted, entered zealously on the discharge of their duties. They planned an extensive system of permanent coast defences, and surveys were immediately commenced with a view to carry it into execution. They arranged the proposed works into six classes. Class A comprised certain old works, constructed during the two wars with Great Britain, but which required alterations and repairs. Classes B, C, D, E, and F, the new works proposed to be erected, arranged in the order of their relative importance.

The plan, both in its formation and execution, appears to have been left for several years (from 1816 to 1821) entirely under the control of the Executive. Congress appears to have had no agency in it, except to make the necessary appropriations, which were made in a gross sum "for fortifications," and were expended with the approval of the department, by engineer officers, under the direction of the chief of that corps. In 1821 the practice was changed, and the appropriations were made for each work specifically.

This plan has been partially carried into execution, with a few exceptions made by direction of Congress, in the same order as that in which it was first arranged—

1. By altering and repairing the most important of the old works.

2. By commencing the new works embraced in class B; then those in class C.

From that time to the present the works have been slowly but steadily advancing. Doubts were occasionally expressed, both in and out of Congress, of the necessity of so extensive a system, and the appropriations were frequently so curtailed as materially to retard the completion of the works, but they were suspended but for a single year.

In the year 1836, when our relations with France wore a threatening aspect, the attention of Congress was again called to the defences of the country, and the President was directed, by a resolution of the Senate, adopted on the 15th of February of that year, to make a report on that subject.

General Cass, then Secretary of War, took this occasion to review the whole system adopted by the board of engineers. He disapproved of several of the works recommended by them, either as useless or as unnecessarily large, and considered the whole system as on too extensive a scale. Parts of this document, referring to particular works, are no longer of any practical application, as the works to which they refer are completed; but such portions of it as relate to the general system adopted by the board, are as appropriate at the present day as they were when they were written, and whatever differences of opinion may exist on the subject to which it refers, none can exist as to the ability which it displays. The report is Senate document No. 243, of the year 1836.

In transmitting this report to the Senate, President Jackson (on such a question undoubtedly high authority) expresses his concurrence in the views of the Secretary.

Whatever effect this report may have had on the Congress to which it was transmitted, it does not appear to have produced any permanent change in the system which, from that time to the present, has been gradually advancing, and in but one instance, until the last session, did Congress fail to carry out the recommendations of the board. Within that period many (and those by far the most important) of the works have been completed; others are nearly so, and several have been commenced and are in various stages of advancement. I herewith append a tabular statement, in which the works recommended by the board are arranged into their respective classes, showing the works on the Atlantic and Gulf of Mexico that are complete, or nearly so; those that are in progress of construction, and those that are proposed to be built, but which have not yet been commenced, together with the cost, actual or estimated (as the case

may be) of each work, the number of guns for which it is calculated, &c. I also append sectional maps showing the exact position of each work, executed or proposed, and exhibiting to the eye its actual state, that is, whether it be completed, in course of construction, or not yet commenced. From this statement, it will be seen that the number of all the works recommended by the board, on the Atlantic and Gulf of Mexico, including old works repaired, is one hundred and fifty-seven, carrying, in the aggregate, 12,685 guns.

That the cost of repairing the old works, class A, has been	\$3, 583, 742
The cost of the new works that are completed, or nearly so, class B, has been.....	13, 172, 966

Making, of all sums expended since the year 1816 to the present day, in the construction and repairs of the works embraced in classes A and B, an aggregate amount of.....	\$16, 756, 708
To complete them will require.....	1, 123, 896
That on the works now under construction, class C, there has been expended.....	\$3, 902, 828
To complete them will require.....	5, 028, 194

Making, as the estimated aggregate cost of the works now under construction, class C, the sum of.....	8, 931, 022
And that the estimated cost of all the works recommended, but not yet commenced, is.....	18, 147, 000

Grand total.....	\$44, 958, 626
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Thus we find that the total cost of the entire system recommended by the board for the defence of the Atlantic and Gulf coasts (including the cost of old works repaired) is estimated at \$44,958,626. It must be observed, however, that a large portion of the estimate for works not yet commenced is purely conjectural.

Having shown what the plan adopted by the board proposed to accomplish, and how far it has been carried into execution, I now proceed to consider the question submitted by the House, whether that plan "may not be essentially modified by reducing the number of works proposed to be erected, and by abandoning some of the forts now in progress of construction."

As this question is one of vital importance to the country, I deemed it prudent to obtain all the aid that professional knowledge and experience could afford in arriving at a correct conclusion; I therefore addressed a series of questions to some of the most distinguished officers of the navy, and of the corps of engineers, which I requested them to answer. The answers to these questions are hereto appended, and, together with the able and elaborate report of the chief engineer, constitute a mass of highly interesting and instructive matter on the subject of the national defences. I have been much indebted to these interesting papers in preparing this report.

I shall first consider that part of the inquiry submitted by the House, which refers to the works now in progress of construction. The board, in carrying their plan into execution, commenced, (as I have already said,) with the most important works; it follows, therefore, that those now in progress of construction are deemed by them more important than those that have not yet been commenced, and, therefore, that if the former are unnecessary, the latter are still more so. I shall confine myself at present to the works on the Atlantic and on the Gulf of Mexico; those on the northern lakes will form the subject of a separate inquiry.

The works now in course of construction are enumerated in class C. Some

of those in class B are not yet quite finished, but they are all so nearly so as to be classed by the board among those that are completed.

By reference to this list it will be seen that several of these works constitute parts of the defences of some of our most important seaports, to wit: of Philadelphia, Baltimore, Norfolk, (with the navy yard at Portsmouth,) Charleston, Pensacola, (the only good harbor for vessels-of-war, and the only naval depot on the Gulf,) and Mobile. There can be no doubt that if any points on our coast ought to be fortified these should be among the number.

With regard to important positions like these, my opinion is that nothing should be left to chance, but that they should be fortified, so as to make them impregnable by any force that may reasonably be expected to be brought against them. In the event of a war with a great maritime power, these points would probably be the first to be assailed. Indeed they are the only ones at which we are assailable. The power of steam has, in point of time, deprived the Atlantic of two-thirds of its width, and in certainty of movement and accuracy of calculation has narrowed it still more. It is, perhaps, not going too far to say that a naval expedition from England could now calculate with more precision the time of its arrival at one of our ports, than forty years ago it could have calculated the time of its reaching the opposite side of the British channel.

It is evident, therefore, that our great cities should be prepared against such expeditions, not only in time of war, but that as war may come unexpectedly upon us, they should, even in time of peace, be always prepared to repel an attack. The only question is, how is this to be accomplished? Three different modes have been suggested:

1st. By such temporary, fixed, or floating defences as may be hastily prepared to meet an emergency.

2d. By vessels-of-war; or,

3d. By permanent fortifications.

With regard to temporary works on land, hastily thrown up, they are unquestionably often of great advantage where there are no fortifications, and sometimes have been found sufficient to repel an attack. It is manifest, however, that they ought not to be relied on as substitutes for the latter, for defending important positions like those we are now considering against vessels-of-war. Their only recommendation is their cheapness. On the other hand, they require greater numbers to defend them, and they afford less protection against the enemy's fire. Even if they were equally effectual, therefore, they would only be the means of saving money at the expense of life. But it is manifest that, even when skilfully constructed, they must be inferior, as means of defence, to permanent fortifications of solid masonry.

In respect to floating batteries there appears to be but one opinion among officers both of the army and navy. This subject was brought before Congress some years ago by a late distinguished officer of the army, who proposed them as substitutes both for fortifications and for vessels of war in the protection of our coast. The then Secretary of War (Mr. Poinsett) was directed to give his views upon it. He referred the matter to the board of navy commissioners, by whom it was fully investigated, and they conclude their report upon it by expressing the opinion "that although a few such or similar batteries might, perhaps, be useful in particular places, it would not be expedient to adopt them generally as substitutes for field fortifications or for a floating battery, which should be adapted to more extensive use and capable of quicker and more rapid combinations," to wit, a naval force.

In this opinion Mr. Poinsett concurred, and it will be seen that the officers, both military and naval, who have favored me with their views on this point, concur in the belief that, although steam batteries may, under some circumstances, be highly valuable as auxiliaries to fortifications or vessels-of-war, alone they

are inferior to either, and that from the perishable nature of the material of which they must be constructed they are far more expensive than fortifications.

It only remains to inquire whether vessels-of-war should be resorted to as a substitute for fortifications.

On this point opinions widely differ. The more prevalent one, even among naval officers, is, that the navy could not, or if it could, that it ought not to be relied on for this purpose. In this opinion I entirely concur. The objections to this mode of defence appear to me insuperable. The modern practice of nations dispenses with any formal declaration of war, and the first intimation of it may be the appearance of a hostile fleet before one of our cities, or, perhaps, simultaneously before several. Is it probable that a sufficient naval force would always be at hand ready to repel such an unexpected attack? But even when the existence of a war was well known, could a city always calculate with certainty on the presence of a naval force precisely at the moment it was needed? The vessels assigned to this duty would either cruise off the coast to watch for and intercept the enemy's fleet, or they would remain stationary in the harbor. If the first course were adopted, what security would they afford? Any one of the numerous casualties to which vessels are liable at sea might enable the enemy's fleet to pass them, and accomplish his purpose of destroying a city and millions of public and private property, or of selling forbearance at an enormous price, before our vessels were aware of its approach.

If, on the contrary, the vessels assigned to the defence of a city remained constantly in port, this would necessarily involve an immense increase of our naval establishment. The chief engineer estimates that, inasmuch as it would be necessary to retain at each important point a fleet entirely adequate to its defence, the entire naval force destined for the defence of our coast alone would have to be as many times larger than the squadron that might reasonably be expected to attack one of these points as there are points to defend. Supposing, therefore, that Boston, New York, Philadelphia, Baltimore, Charleston, and New Orleans were unprovided with land defences, each of them would require for its protection a naval force as large as any that might probably be sent against it; and as twenty ships-of-the-line would be no extraordinary armament to send on such a mission, it would require a force at least equal to that at each of the above-mentioned ports, making in all an aggregate force of one hundred and twenty ships-of-the-line for the defence of these ports alone.

The argument is, perhaps, pushed to an extreme, but it cannot be denied that, just in proportion as fortifications are dispensed with for the protection of our principal seaports, the navy must be augmented; and all naval officers who recommend a partial substitution of naval for land defences admit that such must be the consequence of the adoption of this policy. It follows, therefore, that of the two modes of defence, the naval is by far the most expensive. A few facts will more fully demonstrate the truth of this assertion.

1. A first class man-of-war, carrying say eighty-four guns, is estimated to cost \$500,000. Now this sum would, under ordinary circumstances, construct a fortification that would mount two hundred and fifty guns.

The cost of building, equipping, and repairing the navy from 1816 to 1850, both included, was upwards of \$51,000,000. The aggregate cost of building and repairing all the forts which have been completed and are now in course of construction will (when the latter are finished) amount to \$26,811,626. The entire naval force of the United States carries 2,032 guns; the number of all the guns in the forts that are completed and being built will be 6,093, so that to keep 2,032 guns on ship-board costs nearly double what it costs to mount 6,093 on fortifications, and the first amount does not include the cost of docks and other establishments erected by the government for the construction and repair of vessels. But this is not all. It is computed that few ships last longer than forty years, and their average duration does not exceed fifteen years, and at the

end of sixteen years the expense of repairs of a ship about equals her first cost. On the contrary, a fort when once built lasts forever, and the cost of repairs is trifling. It is evident from these facts, that, supposing the two modes of defence to be in other respects equal, on the score of economy there can be no comparison between them.

I will not undertake to decide a question which has long been a subject of controversy between officers of the army and navy, and that is, the relative superiority of fortifications and vessels-of-war. It is believed, however, that few naval officers, at the present day, would venture to affirm that, in a contest between a regular fortification and a vessel-of-war, equal in the number and calibre of their guns, and in the skill and courage with which they are managed, the vessel would be likely to prove victorious.

The practice of the civilized world is opposed to such a theory. There is hardly a nation that has seaports to defend that does not resort to fortifications for that purpose, and the instances are rare in which they have failed to accomplish the object.

Some memorable instances of successful attacks by vessels-of-war on fortified places have been adduced in support of this theory, but it is probable that the result in these cases may be traced to some fortunate accident, or to causes not inherent in the two modes of attack and defence.

On the other hand, many examples may be found (some furnished by our own history) of successful resistance by forts to vessels-of-war. It would seem, too, that if there were ever any doubts on the subject, the Paixhan gun, which, it is admitted on all hands, gives great advantage to forts over vessels, must have removed them.

England is frequently cited as an example of a country which has long relied successfully on her navy for the defence of her seaports. Even if the fact were so, it would constitute no argument in favor of the adoption of the same policy by the United States. England has a small coast and a powerful navy. The United States have a sea front nearly equal to that of all Europe, and a small navy. The naval supremacy of England has always enabled her not only to protect her own commerce and harass that of her enemy, but often to drive his ships from the sea, and compel them to take refuge under the guns of his fortifications, while the proximity of her shores to those of France often enable the same squadron to overlook the ports of her enemy, and to protect her own. But it is a mistake to suppose that England relies exclusively on her navy for the defence of her ports. On the contrary, those of her ports that are most likely to invite attack, from being the sites of public naval establishments, are strongly fortified. Nevertheless, the most eminent statesmen of that country admit and deplore the insufficiency of her land defences, since the introduction of war steamers has almost bridged the British channel. What effect this new element of naval warfare is destined to produce on the destinies of England—whether it tends to increase or to diminish her maritime superiority—whether it will not, in some measure, deprive her of the immunity from invasion which her insular position has hitherto secured to her, are questions that yet remain to be decided.

I conclude, therefore, that whenever a place is considered of sufficient importance to require defences, and is susceptible of being defended by fortifications, they are in every point of view preferable to vessels-of-war.

In saying this, I mean do disparagement to the navy. On the contrary, I would still rely mainly on it for the defence of the country, but I would have them defend her, not by remaining at anchor in her ports, but by going abroad on the wide ocean, protecting her commerce and harassing that of the enemy; hovering on his coast and compelling him, instead of attacking our cities, to look to the defence of his own. These, in my opinion, are the appropriate duties of the navy, and by achievements like these have all their laurels been won.

The form of expression used in the resolution, that the Secretary of War be directed to report whether the plan of 1816 may not "*now*" be modified by abandoning the works in course of construction, would seem to imply a supposition on the part of the House that although they may have been necessary at one time they have ceased to be so now.

Great changes have undoubtedly taken place since the plan was adopted. The country has advanced with unexampled rapidity in wealth, in population, and all the elements of military power. Discoveries and improvements, directly or indirectly affecting the facilities of attack and defence, have astonished the world. Railroads have been introduced; steam has been applied to navigating the ocean; the telegraph accomplishes what would then have been considered miracles.

Among these changes there is one which, although of far less general importance than those just alluded to, nevertheless as it is directly connected with the military art, deserves to be mentioned, and that is the invention, or, at least, introduction into general use of the Paixhan gun, as it is generally called from its supposed inventor.* These discoveries or improvements are destined to exercise an influence on military affairs, the extent of which cannot be appreciated until it shall have been tested by experience.

There can be no doubt that so far as regards its capacity to resist invasion, these changes have vastly increased the relative power of this country. The rapidity with which intelligence may be transmitted, and troops and munitions of war conveyed from one extremity of the country to the other, enables us to combine the opposite advantages of an extended territory and a rapid concentration of force. These advantages, together with the augmented population and resources of the country, must remove all apprehension of an invasion of it by an army from abroad. No army could be transported across the ocean large enough to venture beyond the reach of the transports that conveyed it to our shores, and any fortifications designed to provide against such a contingency, may safely be dispensed with.

But the fortifications now under consideration look to no such event. They are designed to protect large cities from attacks by vessels-of-war, and against such attacks numbers are of no avail; the most populous city is as powerless against them as the smallest village. It follows, therefore, that neither the increase of our population nor the facilities afforded by railroads and telegraphs tend, in the least degree, to diminish the necessity of these works.

On the other hand, it is admitted by all that the introduction of war steamers, which greatly facilitate the attack on all places accessible by water, renders it more necessary than ever to fortify them against such attacks.

It is also admitted that the Paixhan gun, so terrific in its effects on all floating defences, is comparatively harmless against the solid masonry of forts, and has, therefore, rendered the latter, at the same time, more necessary and more efficacious.

I therefore conclude that if the above-mentioned works were necessary in 1816, they are still more so at the present time, and that they ought not to be abandoned.

There are several works comprised in this class (C) that stand on different ground. They are, Fort Knox, in Maine; Fort Clinch, in Georgia; Fort Taylor, at Key West; and Fort Jefferson, on one of the Tortugas islands.

Fort Knox is designed to protect Penobscot river, which has a large commerce,

*This formidable gun is said to have been invented and introduced into our service (by the name of "The Columbiad") by the late Col. Bomford, of the ordnance, some years before the alleged discovery by the French officer who has had the honor of giving it his name. Hence the manner in which I have qualified my remarks in relation to it.

and affords a fine anchorage. The large town of Bangor and several flourishing villages lie on the river and bay.

Fort Clinch is intended to defend the entrance into Cumberland sound. This sheet of water affords an excellent harbor, and the bar at the entrance, it is said, affords a sufficient draught of water for sloops-of-war and merchantmen. There is no town of much consequence, I believe, either on the sound, or on St. Mary's river, which empties into it, and the utility of this work depends upon the importance of excluding an enemy from the sound, and securing it to ourselves. Both this work and the preceding belong more properly to another class of cases to which I shall presently refer.

The two remaining works now in course of construction are those on Key West and the Tortugas. In relation to these there can be but one opinion. These islands, situated directly in the narrow channel between the southern extremity of Florida and the island of Cuba, may be said to command the northern gateway of the Gulf, as Jamaica does its southern. The latter is in possession of the only station from whose naval power the United States have anything to apprehend. Were these islands, with their fine harbors, also to fall into her hands, they would enable her to cut off all communication between our naval forces on the Gulf and those on the Atlantic, to obtain complete control over the Gulf, and block up the vast and increasing commerce of which it is the theatre. A railroad across the isthmus of Tehuantepec (the existence of which, at no distant period, can hardly be doubted) would impart additional importance to the Gulf, as it would then become the main channel of communication between the Atlantic and the Pacific; and recent events admonish us that our progress in that quarter is watched with jealousy by more than one of the great powers of Europe.

I am, therefore, decidedly of opinion, not only that these two works should not be abandoned, but that they should be completed as soon as practicable.

It has been objected to several of the works which have been or are nearly completed, that they are on too large a scale. One or two of those which were commenced shortly after the adoption of the plan, are doubtless liable to this criticism. They are calculated not only to repel an attack by sea, but to withstand a long siege by powerful land forces. It seems to me extremely doubtful whether the strong defences on the land sides of these forts were ever necessary; be that as it may, however, there can be no question that railroads and the telegraph have, in most cases, done away with the necessity for any works on the land side, except such as may be requisite to resist a *coup de main*, or prevent an escalade. It is to be presumed that the board have modified the plan of the works now constructing so as to adapt them to the present time, and to diminish their magnitude and cost. This concludes what I have to say in relation to the works now in the course of construction.

I now come to the last branch of the inquiry proposed by the House, and and that is, whether the number of fortifications proposed to be built may not be reduced?

These works are enumerated in classes D, E, and F, and the accompanying map will show their respective positions. It will be seen by the statement A, that they considerably exceed in number those which have been completed, or are now in progress of construction.

Some of the proposed works are designed to complete the system of defences for the protection of the large seaports or naval depots. Whether these places be not already sufficiently protected by the works that have been completed, or are in progress of construction, is a purely professional question, in regard to which I have no reason to doubt the correctness of the conclusions at which the board have arrived. In regard to two of those forts, however, I will venture to offer a few suggestions. They are the two mentioned in classes D and F, which it is proposed to construct on the Patuxent river, as part of the system

of defences of Washington. The construction of these works is based on the supposition that the enemy may cross the Atlantic, ascend the Chesapeake bay to the Patuxent river, disembark a large army with all its *materiel*, including a train of artillery, and then march upwards of twenty miles through a country abounding in facilities for resisting or retarding his march, and capture this city.

It appears to me exceedingly improbable that such an attempt should be made, or, if made, that it should be successful. It is true that it was once made and succeeded, but it was under very different circumstances from those which now exist. To say nothing of the probability that there would, in time of war, at all times be found some vessels-of-war at Norfolk, lying securely under the protection of Fortress Monroe and Fort Calhoun, (neither of which existed in 1814,) a telegraphic despatch might in a few hours concentrate in the bay all the war steamers as far north as Boston, and as far south as Savannah, whereby the enemy's retreat might be cut off, and the squadron (unless a very powerful one) be captured.

In the second place, the two forts on the Potomac—Fort Washington, and the one proposed to be built at Cedar Point—would prevent the fleet from ascending that river (as they did on the former occasion) to co-operate with the army, cover his flank, and secure his retreat in case of disaster. Lastly, a more numerous and efficient militia could now be assembled for the defence of this city, in twenty-four hours, than could have been brought together in 1814 in the same number of days; and my opinion is, therefore, that these works may safely be dispensed with.

But the great majority of these works are intended to fortify places where no fortifications now exist. Whether any or all of these places are of such importance as to require permanent defences is a question in regard to which it is probable that a great diversity of views will be found to exist.

I have already given it as my opinion that all seaports where there are important public establishments, such as docks and navy yards, or where there is great accumulation of private wealth, should be strongly fortified against attacks by sea. Beyond this it is difficult to lay down any general rule, and to say where we should stop, although it is evident we must stop somewhere. General Cass, in the report to which I have already alluded, says:

"I think every town large enough to tempt the cupidity of an enemy should be defended by works, fixed or floating, suited to its local position, and sufficiently extensive to resist such attempts as would be made against it."

And again:

"All the harbors and inlets upon the coasts where there are cities or towns, whose situation and importance create just apprehension, and particularly where we have public naval establishments, should be defended by works proportioned to any emergency that may probably occur."

The correctness of these propositions may be admitted, and yet a wide field of discussion be left open, for the difficulty does not lie so much in finding a rule as in applying it to a particular case; a difficulty increased by the local and political considerations which will always exercise more or less influence on its decision.

It will be seen, however, by an examination of the lists D, E, and F, that the board have gone considerably beyond the limits which this rule would prescribe. Many of the works embraced in this list are not designed to protect town that could "tempt the cupidity of an enemy," or where the public establishments of any kind, or "whose situation and importance create just apprehension." Most of them are intended to protect bays, sounds, inlets, roadsteads or harbors, the loss of which

convenient to our merchantmen, or the possession of which might be useful to the enemy.

For information in regard to these works I refer to the very able report of the chief engineer, in which they are separately examined, and the object of each is fully explained. This report may satisfy Congress, though I confess it has failed to satisfy me that all of these works ought to be built.

The construction of fortifications at such points and for such purposes seems to be based on the supposition that the enemy is to have complete mastery over our coast, a supposition we are not warranted in making. On the contrary, it seems to me that the protection of our commerce, whether on our own coast or elsewhere, is the appropriate function of our navy, and may be safely left to it. We cannot expect, particularly since the introduction of war steamers of light draught, by any system of fortification, however extensive, to exclude the enemy from every bay, inlet, or creek in a seacoast on the two oceans, of several thousands of miles in extent; and there can be no great advantage in preventing his access to one when he can find another nearly or quite as good at no great distance. I admit that some of these harbors may be so important as to require fortifications, but I believe that such is not the case with a great majority of them.

In determining the extent to which we will fortify our seacoast there is one fact which we ought never to lose sight of, and that is, that every fortification which is not necessary is a positive disadvantage. Forts are elements of weakness as well as of strength, for, if they happen to fall into the hands of the enemy, they become means of annoyance and even of danger to the country by which they were erected. The strength of Gibraltar, which did not prevent its capture by the English, has enabled them to retain it, in spite of the efforts of Spain, for nearly a century and a half; and Calais was more than two centuries in the possession of the same power. Although we have no reason to apprehend that any attempt would be made to acquire permanent possession of any of our works, yet bays or harbors, in themselves of little consequence, might, if they were fortified, and the forts were taken by the enemy, become a source of great annoyance during the whole period of the war. It follows, therefore, that every fort should be provided, in time of war, with an armament and garrison fully adequate to its defence.

By statement A it appears that if all the works enumerated in the list for the Atlantic and Gulf of Mexico were completed they would require, to provide them all with proper war garrisons, 62,300 men. Those on the lakes would require 2,600 more, making, for the forts on the Atlantic side of the States, no less than 64,900 men, a larger force than the regular army of this country has ever amounted to.

I have no means of knowing what force would be necessary for the works on the Pacific; but if the system were carried to the same extent on that coast to which it is proposed to carry it on the Atlantic, to garrison all the works on both oceans in time of war would scarcely require a smaller force than 100,000 men.

The chief engineer has suggested that the militia of the neighborhood might, in a great measure, be relied on for this purpose, as it is a service to which it is well adapted. This may be true, but it does not entirely obviate the objection. This duty would differ from that for which resort is usually had to militia. It is not like hastily collecting men to resist an impending danger, and then allowing them to disperse and return to their usual avocations as soon as it is over. It would not do to leave the forts unprovided with garrisons until the enemy had actually made his appearance. On the contrary, as there would be no means of knowing when he would come, the militia would have to remain constantly in the forts. This would be particularly the case with works of the class that we are now examining, many of which are remote from any point

from which they could be speedily reinforced. For this kind of service, therefore, the militia would possess no advantage, in point of economy, over regular troops.

Great, however, as would be the expense attending this system, there is no doubt that, in a time of war, the country would cheerfully submit to it. But this is not all. These works ought not only to be protected in time of war, but even in time of peace they ought to be prepared to resist an attempt to capture them by a surprise or *coup de main*. To construct them and leave them unguarded until war has actually broken out, when the first act of hostility might and probably *would* be to seize them, would, it seems to me, be the height of imprudence.

What is a proper peace garrison for works of this sort is a question in regard to which military men differ. The strength of the garrison would depend not only on its size, but, in some measure, also, on the position of each work, the facility of speedily affording it relief, &c.

Supposing that the estimate I have made of the war garrisons of all the works erected and to be erected according to the plan of the board, on the Atlantic and the Pacific, of one hundred thousand men, to be correct, and estimating a proper peace garrison at one-tenth of this number, (which is believed to be a very low estimate,) the force required for this purpose would be almost equal to that of the present army.

Would the country submit to the burden which such a gigantic system of fortifications would entail upon it? I think not. The people of this country, although prodigal of their expenditures in time of war, are parsimonious in preparing for it. They would never consent to expend annually large sums in order to prepare for a remote and contingent danger. The consequence would be that these works, when completed, would be neglected, and would never be prepared for a sudden and unexpected attack.

We have ample experience of this fact. No military man will affirm that the works already completed are provided with such garrisons and armaments as a prudent foresight would dictate. The reverse is notoriously true, and yet within a few years past events have several times occurred calculated to admonish the government of the necessity of preparation. If these preparations have not been made, it is not because they have not been repeatedly urged upon Congress. Thus, by attempting too much, we run the risk of accomplishing nothing, or worse than nothing. I am, therefore, of opinion, that many of the works in the classes D, E, and F, particularly in the last two classes, might and ought to be dispensed with.

It is with regret that I feel constrained to differ from the board of engineers on a subject to which they have devoted so much time and attention; but this is not a mere question of engineering. To designate the points that are susceptible of being fortified, to determine the extent, character, and strength of the works, and to superintend their construction, is the province of the engineer; but whether any and which of these points it is expedient to fortify is a question of national policy, involving a great many and important considerations. This question should be fully investigated, and now is the time to make the investigation. As soon as the works now in progress of construction shall have been completed the board will enter upon a class of works of more questionable utility.

I recommend, therefore, that the department be authorized to organize a board, composed of officers of the army and navy and of civilians, whose duty it shall be to examine which of the works comprised in classes D, E, and F ought to be constructed, and whether any that are not comprised in that list be necessary; that they be directed to report to Congress the results of their

inquiry, and to state at length the grounds of their decision in reference to each particular work.

I shall now say a few words on the subject of

THE LAKE FRONTIER.

General Cass, in 1836, expressed the opinion that this frontier required no permanent defences; that we might safely rely for its security "upon those means, both in *personnel* and the *materiel*, which the extent and other advantages of our country insure to us, and which must give us the superiority in that quarter." This opinion has been ably combated by the chief engineer, and I cannot entirely concur in it.

The mercantile marine of Great Britain on Lake Ontario considerably exceeds that of the United States, and her undisputed command of the St. Lawrence enables her to augment her naval force on that lake to an indefinite extent. On the other lakes the reverse is the case; our shipping there far exceeds that of England, and every day is adding to our superiority. But to enable us to retain this advantage we must have docks and navy yards, and in time of war these establishments ought to be rendered secure against a *coup de main*. The Welland canal, affording an inland communication between Lakes Ontario and Erie, would greatly facilitate enterprises of this nature.

Statement B contains a list of the works on this frontier, with their position, strength, &c. It will be seen from this statement that there are in all eight forts on the whole northern frontier, of which only three, to wit, Fort Porter, at Buffalo, Fort Wayne, at Detroit, and a fort at Rouse's Point, Lake Champlain, are new; the remainder are old works, constructed before and during the last war with Great Britain.

With regard to the first two, as they are completed, it is useless to discuss their utility. In reference to the first, however, I presume there can be scarcely a difference of opinion. Buffalo, with the great amount of shipping always collected there, would offer great temptations to an enemy, and its proximity to the Welland canal would render an expedition against it not so improbable as might be supposed. There was, therefore, an obvious necessity for the defences at that city.

The necessity of the strong work at Detroit is not so apparent, unless the enemy should acquire the ascendancy on Lake Erie or Lake Huron, an event by no means probable.

My first impressions were against the utility of the very strong fort now in course of construction at Rouse's Point. The arguments of the chief engineer, however, on this point are very strong if not conclusive. The enemy, having the command of the St. Lawrence, could, by means of their canals communicating with the head of Lake Champlain, in a very brief space of time throw a sufficient naval force into that lake to give them command of it. I think, therefore, that this work, on which a large sum has been already expended, should be completed.

The five other forts on the lakes are old works, constructed during or before the last war. As only small appropriations are required to repair and enlarge them, I do not think they ought to be abandoned.

Forts Ontario and Niagara are the only fortified places we have from the mouth of the St. Lawrence to Lake Erie; and, although they were built with reference to a different state of things from that which now exists, they would be useful in affording protection to our shipping in those waters.

Forts Brady, Mackinac, and Gratiot command, respectively, the narrow straits between Lakes Superior and Huron, and between the latter lake and Lakes Michigan and St. Clair. Although I do not think that circumstances are likely to occur to render them necessary as means of defence, I am not prepared to

recommend their abandonment. In the event of a war it will always be necessary to keep a military force on that frontier, and no more eligible stations could probably be selected than the very points at which these forts are built, being all directly in the line of communication between the lakes, where supplies could be easily sent to them and whence they could be most easily and rapidly transported to any other point where they might be needed.

The chief engineer suggests that, in addition to the works above enumerated, it will be advisable to construct one on the St. Lawrence and one or more on Lake Ontario, as a protection to our shipping in that quarter. His remarks on this subject are entitled to great weight, and will form a very proper subject of consideration for the joint board I have recommended, should this suggestion be favorably received.

THE PACIFIC COAST.

In 1848 a joint commission, composed of naval and engineer officers, was organized to make a reconnoissance of the Pacific coast, with a view to a designation of such points as it might be deemed advisable to fortify. That board has recently made a report in which they point out various positions where, in their opinion, fortifications should be constructed. These positions are divided into three classes in the order of their relative importance, and a list of them will be found appended to the report of the chief engineer. The commission recommended that measures be taken as soon as possible for the construction of fortifications at San Francisco, San Diego, and the mouth of Columbia river.

There can be but little doubt that these three last mentioned points, from their importance in a commercial point of view, will require defences, and considering their remoteness and the difficulty of affording them speedy relief in time of war, I should think that no time ought to be lost in carrying this recommendation into effect. With regard to the other points, my remarks as to the extent to which the Atlantic coast should be fortified apply with still greater force to the Pacific, on account of the difficulty and expense of constructing fortifications and of providing them with proper garrisons. I need not, therefore, repeat those remarks.

Before closing this report I beg leave to make a few remarks on a subject which, though not embraced by the resolution of the House, is yet so intimately connected with the defences of the country that the report would hardly be complete without some reference to it; and that is the

ARMAMENT OF FORTIFICATIONS.

Congress, at their last session, omitted to make the usual appropriations either for fortifications or their armament. But, whatever policy may be adopted with reference to fortifications, it will still be necessary to provide a much larger supply of ordnance than we now have on hand. By reference to the report from the head of the Ordnance bureau, hereto annexed, (marked C,) it will be seen that the whole number of guns, of all calibres, now on hand, whether in the forts or in the arsenals, amounts only to 3,535, and that of gun carriages is still smaller. The entire number of guns that can be mounted in the forts already completed, (classes A and B,) amounts to 4,572 guns; and if the works now in progress of construction should be completed, the total number of guns that would then be required for all the forts would be 6,093. It appears, therefore, that the supply of ordnance now on hand is very inadequate, even to the present wants of the service. I will observe, too, that even if Congress should determine to restrict the system of fortifications, this would not obviate the necessity for a large increase in the supply of heavy ordnance. Some means of defence must

be employed, and cannon is an indispensable part of any system that may be adopted.

It appears, too, from the reports hereto appended, that the great naval powers of Europe have, within a few years past, greatly increased the calibre of the guns mounted on their vessels-of-war. This renders it obviously necessary that the power of the batteries intended to resist them should also be proportionably increased. I believe it is the opinion of all officers, both of the army and navy, who have devoted much attention to this subject, that many of the guns now in our most important forts ought to be removed and others of longer range substituted. A glance at the report of the Ordnance bureau will show how very deficient we are in the heavy descriptions of ordnance, particularly in eight and ten inch columbiads, the most effective weapon against vessels-of-war.

To manufacture cannon of good quality is a work that demands considerable time, and as they are imperishable when properly taken care of, there is no good reason why the government should not at once provide the requisite supply.

In connexion with this subject I would venture to suggest that provisions be made for a distribution of artillery among the militia of the States and Territories. Our people are more deficient in the knowledge of this arm than of any other, and yet it is one that would be most required in a war with any European power. If a standing appropriation were made applicable to the distribution of artillery, and of the book on artillery practice among the States and Territories, it would tend very much to promote the knowledge of this essential branch of the military art among the citizens of the country.

Respectfully submitted.

C. M. CONRAD,
Secretary of War.

HON. LINN BOYD,
Speaker of the House of Representatives.

List of documents accompanying the report of the Secretary of War of December 8, 1851, on the subject of fortifications, in answer to a resolution of the House of Representatives of March 3, 1851.

- A.—Statement of fortifications on the Atlantic coast and Gulf of Mexico, the amount expended on each, and the estimated cost of completion and armament.
- B.—Statement of fortifications on the northern frontier.
- C.—Statement of cannon and carriages at the forts and arsenals.
- D.—Report of General J. G. Totten, chief engineer.
- E.—Letter to the Secretary of the Navy requesting the views of naval officers on certain points stated, and their reports, viz :
1. Report of Commodore C. Morris.
 2. Report of Commodore M. C. Perry.
 3. Report of Commander R. B. Cunningham.
 4. Report of Commander S. F. Dupont.
 5. Report of Lieutenant J. Lanman.
 6. Report of Lieutenant M. F. Maury.
 7. Report of Lieutenant J. A. Dahlgren.
- F.—Order to the chief engineer, requiring the views of engineer officers on certain points stated, and their reports, viz :
8. Report of Lieutenant Colonel R. E. De Russey.
 9. Report of Major W. H. Chase.
 10. Report of Major R. Delafield.

Statement of the number of fortifications which have been built on the Atlantic coast and Gulf of Mexico, including those nearly completed under the general system adopted after the war with Great Britain, the number in progress of construction, and the number not yet commenced but proposed to be erected; and exhibiting also the States and Territories in which the several forts are situated or are to be located; when they were commenced, when completed, and when they are expected to be finished; the garrisons required for each in time of peace and in war; the number and calibre of the guns mounted or to be mounted; the estimated cost of construction and armament respectively; the amount expended for construction or repair; and an estimate of the amount required to finish or construct; and the total amount required to be appropriated to complete the armament.

Designation of the work, and State in which located.	Garrison in peace, companies.	Garrison in war, number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete or to construct.	ARMAMENT.													Total number of guns.	Estimated cost of armament, including 100 rounds of ammunition.		
								42-pounders.	36-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Flank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	10-inch mortars.	13-inch mortars.	10-inch mortars, heavy.	8-inch mortars, light.			16-inch stone mortars.	10-inch.
CLASS A.—Old works of the first and second systems to be retained (some temporarily, some permanently) in the new system, including the works repaired, those undergoing repairs, and those to be required only in the event of impending war.																								
1. Fort Sullivan, Eastport, Me.*		180	.....	.....	\$10,000	.....	\$10,000	5	21	2	4	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	36	\$33,725
2. Fort Edgecomb, Wiscasset, Me.*		60	.....	.....	5,000	.....	5,000	.....	19	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19	9,984
3. Fort Preble, Portland harbor, Me.*	1	200	1838	1841	58,811	51,311	7,500	19	19	1	16	2	2	2	2	2	2	2	2	.....	.....	.....	48	48,438
4. Fort Scammel, Portland harbor, Me.*		300	1838	1841	59,836	50,895	.....	19	30	.....	15	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	63	57,095
5. Fort McClary, Portsmouth harbor, Me.*		80	1838	1850	50,598	50,598	.....	5	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	15,817
6. Fort Constitution, Portsmouth harbor, N. H.*	1	250	1838	1851	17,691	17,691	.....	21	14	6	7	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	58	58,815
7. Fort at Gloucester harbor, Mass.*		80	.....	.....	10,000	.....	10,000	8	6	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	14,970
8. Fort Pickering, Salem harbor, Mass.*		60	.....	.....	5,000	.....	5,000	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	11,151
9. Fort Luce, Salem harbor, Mass.*		40	.....	.....	5,000	.....	5,000	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	7,944
10. Fort Sewall, Marblehead harbor, Mass.*		125	.....	.....	10,000	.....	10,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97	53,698
11. Fort Independence, Boston harbor, Mass.*	1	500	1841	1841	594,594	514,594	10,000	6	49	85	15	9	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	191	106,737
12. Fort Winthrop, Boston harbor, Mass.*		400	1841	1841	115,000	75,827	20,573	.....	41	.....	25	9	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	68	60,818
13. West Head battery, Governor's island, Boston harbor, Mass.*		.....	1841	1845	5,144	5,144	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	8,937
14. Southern battery, Governor's island, Boston harbor, Mass.*		.....	1841	1843	.....	5,144	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	8,995

CLASS A.—Old works of the first and second systems to be retained (some temporarily, some permanently) in the new system, including the works repaired, those undergoing repairs, and those to be repaired only in the event of impending war.

[illegible]

• Expected to be completed within about one year after the amounts required; complete shall have been appropriated.

Nature of repairs not yet determined.

Statement of the number of fortifications which have been built on the Atlantic coast and Gulf of Mexico, &c.—Continued.

Designation of the work, and State in which located.	Garrison in peace, companies.	Garrison in war, number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete or to construct.	ARMAMENT.												Estimated cost of armament, including 100 rounds of ammunition.					
								42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Rank howitzers.	8-inch howitzers, heavy.	5-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.		8-inch mortars, light.	18-inch stone mortars.	Coborns.	Total number of guns.	
CLASS B.—New works (Mild system) completed, or so nearly completed as to be able to use all or nearly all their batteries.																									
1. Fort Warren, Boston harbor, Mass.*	3	1,500	1833	\$1,168,000	\$1,053,000	\$75,000	62	137	58	52	30	8	16	324	\$336,102
2. Fort Adams, Newport harbor, R. I.*	2	2,440	1834	1,691,343	1,661,343	30,000	59	90	94	31	13	12	83	97	3	7	5	7	464	\$73,384
3. Fort Schuyler, Throg's Neck, East river, N. Y.*	1	1,350	1833	.....	873,013	848,013	25,000	48	48	70	8	12	6	70	6	.....	2	3	5	5	9	19	318	\$73,040
4. Fort Hamilton, New York harbor, N. Y.*	1	900	1834	.....	634,752	614,752	20,000	14	14	.....	5	5	6	48	8	.....	2	4	2	1	5	.....	118	\$63,757
5. Fort Monroe, Old Point Comfort, Va.*	3	2,450	1817	.....	2,477,471	2,402,471	75,000	42	189	10	14	25	12	16	20	5	3	4	3	5	15	.....	371	\$335,210
6. Fort Mifflin, (and preservation of its site.) Beaumont harbor, N. C.*	4	300	1836	.....	461,790	460,790	3,000	.....	12	22	4	4	3	6	6	.....	.....	.....	.....	.....	.....	.....	61	48,990
7. Fort Caswell, Oak island, N. C.*	4	400	1836	.....	576,321	571,321	7,000	.....	90	32	2	2	3	12	8	.....	.....	.....	.....	.....	.....	.....	87	72,711
8. Fort Pulaski, Cockspur island, Ga.*	1	800	1839	.....	958,859	923,859	35,000	.....	65	53	4	.....	.....	4	12	3	1	7	.....	.....	.....	.....	150	138,030
9. Fort Pickens, Pensacola harbor, Fla.*	1	1,300	1838	1844	758,168	758,168	.....	63	17	49	5	13	6	26	13	.....	1	4	4	4	.....	.....	213	185,430
10. Fort McKee, Foster's Bank, Pensacola harbor, Fla.*	1	650	1833	.....	464,626	384,426	80,000	94	24	62	.....	.....	.....	3	36	.....	.....	.....	.....	.....	.....	.....	151	142,790
11. Fort Morgan, Mobile Point, Ala.*	1	700	1819	.....	1,942,556	1,312,556	30,000	14	.....	52	3	4	6	96	10	.....	2	4	9	2	5	.....	139	104,475
12. Fort Pike, Rigolote, La.*	1	300	1819	.....	476,001	473,001	4,000	.....	.....	94	.....	6	.....	9	5	.....	.....	.....	.....	.....	.....	.....	49	36,590
13. Fort Macomb, (formerly Fort Wood.) Chef Menteur, La.*	1	300	1833	.....	438,991	447,491	11,500	.....	.....	94	.....	6	.....	9	5	.....	.....	.....	.....	.....	.....	.....	49	36,590
14. Battery Bienvenue, Bayou Bienvenue, La.*	1	100	1836	1851	129,571	129,571	.....	.....	.....	10	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	11,009
15. Tower Dupre, Bayou Dupre, La.*	1	50	1830	1849	32,317	32,317	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	6,535
16. Fort Jackson, Mississippi river, La.*	1	600	1832	.....	857,608	817,608	40,000	.....	.....	70	.....	7	3	10	5	.....	1	2	.....	.....	.....	.....	150	192,609
17. Fort Livingston, Barrataria Bay, La.*	1	300	1833	.....	321,379	313,379	.....	.....	.....	96	.....	6	3	9	5	.....	.....	.....	.....	.....	.....	.....	53	39,064
	16½	14,300	.....	.....	13,606,406	13,172,906	435,500	236	630	674	66	106	53	351	255	34	69	17	37	19	76	7	9,323,904	

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.

Statement of the number of fortifications which have been built on the Atlantic coast and Gulf of Mexico, &c.—Continued.

Designation of the work, and State in which located.	Garrison in peace, companies.	Garrison in war, number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete or to construct.	ARMAMENT.													Total number of guns.	Estimated cost of armament, including 100 rounds of ammunition.				
								42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Plank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortar.	10-inch mortar, heavy.	10-inch mortar, light.	8-inch mortar, light.			16-inch stone mortar.	Cohorns.		
CLASS C.—Works now under construction, and more or less advanced.																										
1. Fort Knox, opposite Buckeport, Me.*	1	500	1843	....	\$630,442	\$130,442	\$500,000	...	45	50	4	6	5	9	16	2	...	4	2	2	1	2	148	\$135,663	
2. Fort Delaware, Delaware river, Del.*	1	750	1833	....	1,119,914	539,914	530,000	32	33	54	...	...	...	90	10	...	1	2	...	...	...	151	138,074	
3. Fort Carroll, Solter's Point Flats, Baltimore harbor, Md.*	1	800	1847	....	1,000,000	135,000	865,000	38	76	33	...	...	...	...	19	...	...	...	...	...	...	...	159	159,546
4. Fort Calhoun, Hampton Roads, Va.*	1,190	1818	....	....	2,384,398	1,664,968	739,338	54	54	88	...	...	...	8	30	...	...	...	...	...	...	...	224	913,708
5. Fort Sumter, Charleston harbor, S. C.*	1	650	1829	....	837,408	677,408	150,000	41	41	33	...	...	...	9	19	...	...	...	...	...	...	...	146	140,893
6. Fort Clinch, Cumberland Sound, Fla.*	1	550	1850	....	200,000	90,000	180,000	...	99	10	5	5	3	30	30	2	...	2	2	2	...	...	95	71,496
7. Fort Taylor, Key West, Fla.*	1	1,000	1845	....	1,300,000	385,000	895,000	...	88	10	...	...	3	30	42	...	...	5	5	...	2	10	185	160,725
8. Fort Jefferson, Garden Key, Tortugas, Fla.*	1	1,500	1846	....	1,200,000	910,138	989,862	...	183	26	...	...	3	...	66	...	...	5	5	...	...	...	298	273,504
9. Redoubt of Fort Barrancas, Fla.*	...	...	...	...	158,930	106,930	49,000	...	...	8	...	...	3	10	...	...	...	...	...	...	...	...	26	14,179
10. Fort Gaines, Dauphin Island, Ala.*	1	400	1846	....	200,000	90,000	180,000	...	95	...	5	5	3	30	50	...	...	1	2	...	...	...	89	66,473
	7	7,270	....	....	8,931,032	3,902,898	5,028,191	165	573	304	22	25	94	107	318	4	1	19	19	10	6	24	1,531	1,384,351

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.

Statement of the number of fortifications which have been built on the Atlantic coast and Gulf of Mexico, &c.—Continued.

Designation of the work, and State in which located.	Garrison in peace, companies.	Garrison in war, number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete or to construct.	ARMAMENT.												Total number of guns.	Estimated cost of armament, including 100 rounds of ammunition.				
								42-pounders.	38-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Flank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortar, heavy.	10-inch mortar, light.			8-inch mortar, light.	16-inch stone mortars.	Cobors.	
CLASS D.—If works the first to be completed.																									
1. Fort at the mouth of Kennebec river, Me.	...	500	\$300,000	...	\$300,000	45	59	4	6	5	9	16	9	...	4	2	2	1	2	150	\$127,327		
2. New Fort Scammon, Portland harbor, Me.	...	250	48,000	...	48,000	17	18	9	8	46	127,327		
3. New fort at Portsmouth harbor, N. H.	...	750	...	...	300,000	...	300,000	45	52	4	5	5	11	9	...	4	2	2	1	...	150	127,327	
4. New Fort Pickering, Salem harbor, Mass.	...	300	...	...	174,000	...	174,000	16	21	...	...	...	7	7	...	1	4	...	...	...	73	60,824
5. Fort at Jack's Point, Marblehead, Mass.	...	350	...	...	144,000	...	144,000	28	29	...	...	...	10	10	...	2	2	2	...	...	98	75,317
6. Works at Provincetown harbor, Mass.	...	1,000	...	...	600,000	...	600,000	40	56	6	6	3	20	16	...	2	2	2	...	...	200	148,240
7. New forts at New Bedford harbor, Mass.	...	1	...	...	205,000	...	205,000	42	...	...	...	...	3	46	...	4	...	...	...	...	111	102,186
8. Fort on Rose Island, Narraganset Bay, R. I.	...	470	...	...	150,000	...	150,000	30	37	31	...	...	13	...	1	3	...	...	...	...	94	37,590
9. Fort on Sandy Hook Point, N. J.	...	1,000	...	...	1,300,000	...	1,300,000	106	37	...	...	...	19	8	104	...	5	...	4	...	10	284,707
10. Fort on Thomas's Point, Patuxent river, Md.	...	350	...	...	259,000	...	259,000	90	25	2	3	3	6	6	2	1	9	...	...	...	9	59,973
11. Fort at Proctor's Landing, La.	...	100	...	...	100,000	...	100,000	19	...	...	...	...	...	11	...	...	...	...	...	...	37	59,973
12. Works at Galveston bay, Texas.	...	300	300,000	...	300,000	6	3	9	5	...	1	52	30,064		
13. Works at Brazos Santiago, Texas.	...	1	300,000	...	300,000	3	3	9	5	...	1	59	39,064		
	64	5,970	4,063,000	...	4,063,000	70	418	358	23	38	43	110	263	8	6	36	11	6	7	94	1,413	1,940,064	

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.
 † These estimates are conjectural.

‡ Works have been projected for these positions.

Statement of the number of fortifications which have been built on the Atlantic coast and Gulf of Mexico, &c.—Continued.

Designation of the work, and State in which located.	Garrison in peace, companies.	Garrison in war, number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete or to construct.	ARMAMENT.													Total number of guns.	Estimated cost of armament, including 100 rounds of ammunition.			
								49-pounders.	33-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Flank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.			16-inch stone mortars.	Cohorns.	
CLASS E.—Works to be commenced after those in class D.																									
1. New Fort Probble, Portland harbor, Me*	300	...	...	\$155,000	...	\$155,000	8	15	18	4	4	6	10	6	9	1	...	...	...	1	4	78	\$69,670	
2. Works at Gloucester harbor, Mass*	500	...	...	900,000	...	900,000	16	30	33	4	4	...	10	8	...	...	...	...	...	...	...	108	\$33,974	
3. Chelsea Breaker, Boston harbor, Mass*	910,000	...	910,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4. Chelsea Breaker, Boston harbor, Mass*	100,000	...	100,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5. Works at Garrison Point, Plymouth, Mass*	250	...	...	900,000	...	900,000	90	38	...	4	4	...	6	10	...	...	...	...	...	...	...	...	...
6. Works at Stonington Point, Conn*	375	...	...	300,000	...	300,000	90	50	...	9	4	6	10	8	...	...	...	...	...	...	...	...	...
7. Works at Cedar Point, Putnam river, Md*	550	...	...	950,000	...	950,000	94	44	...	9	4	6	10	8	...	...	...	...	...	...	...	...	...
8. Works at Georgetown harbor, S. C*	550	...	...	300,000	...	300,000	94	50	...	9	4	6	10	8	...	...	...	...	...	...	...	...	...
9. Works on Tybee islands, Savannah river, Ga*	100	...	...	190,000	...	190,000	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10. Tower at Pass du Heron, Mobile bay, Ala*	60	...	...	95,000	...	95,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11. Fort at Ship island, Miss*	400	...	...	900,000	...	900,000	35	35	...	3	3	...	30	...	...	...	...	...	...	...	...	...	...
12. Fort at Ship island, Miss*	150	...	...	175,000	...	175,000	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13. Works at Pasa Cavallo, Matagorda bay, Tex*	
	11	3,735	...	...	9,325,000	...	9,325,000	94	184	970	94	29	39	80	76	4	4	18	3	8	3	19	778	653,436

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.

† Works have been projected for these positions.

Statement of the number of fortifications which have been built on the Atlantic coast and Gulf of Mexico, &c.—Continued.

Designation of the work, and State in which located.	Garrison in peace, companies.	Garrison in war, number of men.	When commenced.	When completed.	Estimated cost of construction or repairs.	Amount expended for construction or repairs.	Amount required to complete or construct.	ARMAMENT.													Estimated cost of armament, including 100 rounds of ammunition.											
								42-pounders.	32-pounders.	24-pounders.	18-pounders.	Field pieces.	Blank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	12-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.	16-inch stone mortars.		Cohorns.	Total number of guns.									
CLASS F.—Works to be commenced last of all.	1. Works at Eastport harbor, Me.*	950	...	...	\$100,000	...	\$100,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36	\$39,040	
	2. Works at Machias harbor, Me.*	950	...	...	100,000	...	100,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	44,500		
	3. Works at Mount Desert island, Me.*	1,000	...	...	500,000	...	500,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	900	178,000		
	4. Works at Castine, Me.*	135	...	...	50,000	...	50,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25	23,250		
	5. Works at St. George's bay, Me.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	6. Works at Damariscotta bay, Me.*	...	1,000	...	...	400,000	...	400,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	200	178,000	
	7. Works at Broad bay, Me.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	8. Works at Sheepscot bay, Me.*	...	150	...	...	135,000	...	135,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	91	18,690	
	9. Works in Hog Island channel, Portland, Me.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	10. Works at mouth of Sagadahoc, Me.*	...	150	...	...	75,000	...	75,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30	26,700	
	11. Works at York, Me.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	12. Works at Newburyport, Mass.*	...	950	...	...	100,000	...	100,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	44,500	
	13. Works at Beverly, Mass.*	...	125	...	...	50,000	...	50,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25	93,950	
	14. Works at Saugus Head, Salem, Mass.*	...	180	...	...	51,000	...	51,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40	35,600	
	15. Works at Nahant, Marblehead, Mass.*	...	980	...	...	174,000	...	174,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	55	48,850	
	16. Works at Nahant Head, Boston harbor, Mass.*	...	1,700	...	...	1,090,000	...	1,090,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	324	597,960
	17. Redoubt on Hog island, Boston harbor, Mass.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	18. Works at Naumkeag, Mass.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	19. Works at Edgartown, Mass.*	...	885	...	...	950,000	...	950,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	125	111,320
	20. Works at Falmouth, Mass.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	21. Works at Holmes's Hole, Mass.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	22. Works at Tarpaulin cove, Mass.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	23. Works at Canonicut island, R. I.*	...	1,800	...	...	1,300,000	...	1,300,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	403	358,970
	24. Chain of works at Narragansett, R. I.*	...	...	...	...	307,000	...	307,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	25. Works at mouth of Narragansett harbor, Ct.*	...	500	...	...	198,000	...	198,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	72,860
	26. Works at mouth of Connecticut river, Ct.*	...	250	...	...	100,000	...	100,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25	44,500
	27. New Fort Hale, New Haven harbor, Ct.*	...	125	...	...	48,000	...	48,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	19	23,250
	28. Fort Woonster, New Haven harbor, Ct.*	...	150	...	...	421,000	...	421,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	19	10,860
	29.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Class F.—Works to be commenced last of all.

Designation of the work, and State in which located.

[illegible]

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.
† These estimates are conjectural.

GENERAL REMARKS.

In estimating for peace garrisons, it is considered disadvantageous to discipline to break up the companies when it can be avoided. Several works are reckoned as requiring peace garrisons, though they will not, at our present rate of progress, be prepared for troops for some years. Some of these garrisons might, on an emergency, be reduced for a time; but the force proposed should be regarded generally as the minimum proper to secure our ports from insult and keep watch over the military property. The garrisons, as stated, amount to forty-seven and a half companies for the Atlantic and Gulf seaboard, independent of Tampa Bay and the city of New Orleans.

The works that have been under repair of class A, and those of class B, may all be regarded as completed as respects efficiency. The expenditures still required have relation, most generally, to matters of accommodation of troops, to storehouses, sea walls, wharves, and roads; to repairs of perishable portions; to the substitution of permanent for certain decaying materials; to preservation of sites from the action of the sea, &c.

The amounts given in the column under the head of *expended for construction or repair*, include all the appropriations heretofore made. In some cases balances of these appropriations remain, and are in course of expenditure.



Classes and description of works.	Garrison in peace—compa- nies.	Garrison in war—number of men.	Estimated cost of construc- tion or repair.	Amount expended for con- struction or repair.	Amount required to com- plete or construct.	Total number of guns.	Estimated cost of armament including 100 rounds of ammunition.
Class A.—Old works repaired.....	16	8,225	\$4,272,138	\$3,583,742	\$688,396	1,852	\$1,719,126
Class B.—New works completed or nearly completed.....	16½	14,200	13,608,466	13,172,966	435,500	2,720	2,332,904
Class C.—Works now under construction.....	7	7,270	8,931,022	3,902,828	5,028,194	1,521	1,364,351
Class D.—Works the first to be commenced.....	6½	5,970	4,083,000	.....	4,083,000	1,413	1,249,064
Class E.—Works to be commenced after those in class D.....	1½	3,735	2,235,000	.....	2,235,000	778	653,436
Deduct value of ordnance and ammunition now on hand.....	47½	39,400	33,129,626	20,659,636	12,470,090	8,284	7,318,881
Amount still required for armament of the first five classes.....	.....	.....	.....	.....	.....	.....	2,899,305
Class F.—Works to be commenced last of all.....	.....	22,900	11,829,000	.....	11,829,000	4,401	3,916,490
Grand total.....	47½	62,300	44,958,626	20,659,636	24,299,090	12,685	8,845,066

B.—NORTHERN FRONTIER

Statement of the number of fortifications which have been built, including those nearly completed under the general system adopted after the war with Great Britain, the number in progress of construction, and the number not yet commenced, but proposed to be erected; and exhibiting, also, the States and Territories in which the several forts are situated, or are to be located; when they were commenced, when completed, and when they are expected to be finished; the number and calibre of the guns mounted or to be mounted; the estimated cost of construction and armament, respectively; the amount expended for construction or repair, and an estimate of the amount required to finish or construct; and the total amount required to complete the armament.

Designation of the works and State in which located.	Garrison in peace—companies.	Garrison in war—number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete construction or repair.	ARMAMENT, INCLUDING 100 ROUNDS OF AMMUNITION FOR EACH PIECE.														Total number of guns.	Estimated cost of armament, including one hundred rounds of ammunition.	
								42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Plank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	12-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.	10-inch stone mortars.			Coborns.
1. Fort Brady, Michigan*.....	1	300	.....	.....	\$75,000	.....	\$75,000	.....	10	5	3	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35	\$18,953
2. Fort Mackinac, Michigan*.....	1	300	.....	.....	50,000	.....	50,000	.....	.....	5	3	10	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	29	95,613
3. Fort Gratiot, Michigan*.....	1	300	.....	.....	50,000	.....	50,000	.....	.....	.....	3	10	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	29	95,613
4. New Fort Barracks, nr. Detroit, Mich.*	1	300	1841	.....	\$20,000	\$171,755	66,000	.....	.....	23	20	16	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	63	44,724
5. Works at Buffalo, including Fort Porter, New York.....	1	300	1843	.....	150,000	116,500	32,500	.....	.....	44	16	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	61	51,208
6. Repair of old Fort Niagara, New York.....	1	300	1840	.....	84,027	59,027	25,000	.....	.....	.....	16	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	91	12,861
7. Repair of old Fort Ontario, New York.....	1	300	1839	.....	65,013	76,013	5,000	.....	.....	.....	20	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	18,610
8. Fort at the outlet of Lake Champlain, New York*.....	1	500	1841	.....	411,497	187,365	224,148	.....	64	19	.....	.....	3	40	32	.....	.....	.....	.....	.....	.....	.....	164	132,392
	8	2,000	.....	.....	1,153,537	618,650	528,648	.....	24	79	92	41	19	73	46	.....	.....	.....	.....	.....	.....	.....	455	330,068

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.

O.

Statement of the cannon and carriages at the forts and at the arsenals.

Names of forts.	GUNS.				COLUMBIADS.			HOWITZERS.				MORTARS.						CASEMATE CARRIAGES.					
	42-pounds.	32-pounds.	24-pounds.	18-pounds.	12-pounds.	10-inch sea-coast.	8-inch sea-coast.	8-inch guns.	10-inch sea-coast.	8-inch sea-coast.	8-inch siege.	24-pounds, flank defence.	13-inch, heavy.	10-inch, heavy.	10-inch, light.	8-inch, light.	16-inch, stone.	24-pounds, coborn.	42-pounds.	32-pounds.	24-pounds.	24-pounds, flank defence.	8-inch columblads.
Castle Williams, New York.....	26	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Columbus, New York.....	.....	58	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Mifflin, Pennsylvania.....	.....	30	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort McHenry, Maryland.....	19	30	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Monroe, Virginia.....	39	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Moultrie, South Carolina.....	.....	14	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Castle Pinckney, South Carolina.....	4	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Sumter, South Carolina.....	.....	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort McRee, Florida.....	24	24	64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Ontario, New York.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Battery Hudson, Staten Island, N. Y.....	.....	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Battery Morton, Staten Island, N. Y.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Battery, Governor's Isl'd, N. Y.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Pickens, Florida.....	.....	62	59	6	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Washington, Maryland.....	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Gibson, Ellis Island, N. York.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Niagara, New York.....	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	GUNS.				COLUMBIADS.		HOWITZERS.			MORTARS.					CASEMATE CARRIAGES.								
	42-pounds.	32-pounds.	24-pounds.	18-pounds.	12-pounds.	10-inch sea-coast.	8-inch sea-coast.	8-inch guns.	10-inch sea-coast.	8-inch sea-coast.	8-inch siege.	24-pounds, flank defence.	13-inch, heavy.	10-inch, heavy.	10-inch, light.	8-inch, light.	16-inch, stone.	24-pounds, cohorn.	42-pounds.	32-pounds.	24-pounds.	24-pounds, flank defence.	8-inch columbiads.
Fort at New Bedford harbor, Mass.	---	---	9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Griswold, Connecticut.	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Trumbull, Connecticut.	14	13	3	3	3	1	17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Wood, New York.	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Adams, Rhode Island.	100	49	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Lafayette, New York.	72	23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Hamilton, New York.	33	26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Constitution, New Hampshire.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Independence, Massachusetts.	20	50	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Preble, Maine.	---	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Macon, North Carolina.	---	17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Caswell, North Carolina.	---	20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Pulaski, Georgia.	20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Morgan, Alabama.	64	15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Jackson, Louisiana.	16	26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Wood, Louisiana.	---	28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Pike, Louisiana.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort St. Philip, Louisiana.	---	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fort Barrancas, Florida.	11	10	6	3	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

[illegible]

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	BARRIETTE CARRIAGES.								SIEGE CARRIAGES.				MORTAR BEDS.						Total number of cannon.	Total number of carriages.	
	42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	10-inch columblads.	8-inch columblads.	10-inch sea-coast howitzers.	8-inch sea-coast howitzers.	8-inch guns.	24-pounders.	18-pounders.	12-pounders.	8-inch howitzers.	13-inch, heavy.	10-inch, light.	8-inch, light.	16-inch, stone.			24-pounders, cohorn.
Castle Williams, New York.....	26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	44	26
Fort Columbus, New York.....	—	50	44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	89	120
Fort Mifflin, Pennsylvania.....	—	9	28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	58	37
Fort McHenry, Maryland.....	—	37	20	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	80	69
Fort Monroe, Virginia.....	—	39	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	138	169
F. rt Moultrie, South Carolina.....	—	—	—	—	—	—	—	6	—	—	—	—	—	—	—	—	—	—	—	35	6
Castle Pinckn-y, South Carolina.....	—	—	10	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	22	18
Fort Sumter, South Carolina.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41	41
Fort McRee, Florida.....	—	—	30	—	—	2	—	10	—	—	—	—	10	—	—	—	—	—	—	124	124
Fort Ontario, New York.....	—	—	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	17
Battery Hudson, Staten island, N. Y.....	—	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	37	27
Battery Morton, Staten island, N. Y.....	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	10
South Battery Governor's isl'd, N. Y.....	—	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	6
Fort Pickens, Florida.....	—	10	46	6	14	—	—	12	—	—	—	—	—	—	—	4	—	—	—	196	181
Fort Washington, Maryland.....	—	—	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	30
Fort Gibson, Ellis island, N. York.....	—	10	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	12	12
Fort Niagara, New York.....	—	—	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6
Fort at New Bedford harbor, Mass.....	—	—	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	9
Fort Griswold, Connecticut.....	—	12	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	15
Fort Trumbull, Connecticut.....	—	14	13	—	—	1	17	6	—	—	—	—	—	—	—	—	—	—	—	64	64

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	BARRETTE CARRIAGES.								SIEGE CARRIAGES.				MORTAR BEDS.						Total number of cannon.	Total number of carriages.			
	42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	10-inch columbiads.	8-inch columbiads.	10-inch sea-coast howitzers.	8-inch sea-coast howitzers.	8-inch guns.	24-pounders.	18-pounders.	12-pounders.	8-inch howitzers.	13-inch, heavy.	10-inch, heavy.	10-inch, light.	8-inch, light.			16-inch, stone.	24-pounders, cohorn.	
Castle Williams, New York.....	26																				44	26	
Fort Columbus, New York.....		50	44																			89	120
Fort Mifflin, Pennsylvania.....		9	28																			58	37
Fort McHenry, Maryland.....		37	20					2														80	59
Fort Monroe, Virginia.....		39															3					138	169
Fort Moultrie, South Carolina.....																						35	6
Castle Pinckney, South Carolina.....			10					4														22	18
Fort Sumter, South Carolina.....																						41	41
Fort M'Beae, Florida.....			30		2			10					10									124	124
Fort Ontario, New York.....				7																		17	17
Battery Hudson, Staten island, N. Y.			27																			27	27
Battery Morton, Staten island, N. Y.			10																			10	10
South Battery Governor's isl'd, N. Y.			5																			6	6
Fort Pickens, Florida.....			10	46	6	14		12									4					196	181
Fort Washington, Maryland.....				30																		30	30
Fort Gibson, Ellis island, N. York.			10					2														12	12
Fort Niagara, New York.....				6																		6	6
Fort at New Bedford harbor, Mass.				9																		9	9
Fort Griswold, Connecticut.....			12	3																		16	16
Fort Trumbull, Connecticut.....			14	13	3	5	1	6														64	64

[illegible]

H. K. CRAIG, Colonel of Ordnance.

ORDNANCE OFFICE, Washington, November 13, 1851.

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	BARRETTE CARRIAGES.								SIEGE CARRIAGES.				MORTAR BEDS.						Total number of cannon.	Total number of carriages.			
	42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	10-inch columbiads.	8-inch columbiads.	10-inch sea-coast howitzers.	8-inch sea-coast howitzers.	8-inch guns.	24-pounders.	18-pounders.	12-pounders.	8-inch howitzers.	13-inch, heavy.	10-inch, heavy.	10-inch, light.	8-inch, light.			16-inch, stone.	24-pounders, cohorn.	
Castle Williams, New York.....	26																				44	26	
Fort Columbus, New York.....		50	44																			89	120
Fort Mifflin, Pennsylvania.....		9	28																			68	37
Fort McHenry, Maryland.....		37	20					2														80	69
Fort Monroe, Virginia.....		39															3					138	169
Fort Moultrie, South Carolina.....									6													35	6
Castle Pinckney, South Carolina.....			10					4														22	18
Fort Sumter, South Carolina.....																						41	41
Fort McRae, Florida.....			30			2		10					10									124	124
Fort Ontario, New York.....				7																		17	17
Battery Hudson, Staten island, N. Y.	27																					27	27
Battery Morton, Staten island, N. Y.	10																					10	10
South Battery Governor's isl'd, N. Y.	6																					6	6
Fort Pickens, Florida.....		10	46	6	14			12									4					196	181
Fort Washington, Maryland.....			30																			30	30
Fort Gibson, Ellis island, N. York..		10						2														12	12
Fort Niagara, New York.....				6																		6	6
Fort at New Bedford harbor, Mass.			9																			9	9
Fort Griswold, Connecticut.....		12	3																			15	15
Fort Trumbull, Connecticut.....		14	13	3	3	1	17		6													64	64

[illegible]

H. K. CRAIG, Colonel of Ordnance.

ORDNANCE OFFICE, Washington, November 13, 1851.

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	BARBETTE CARRIAGES.								SIEGE CARRIAGES.						MORTAR BEDS.						Total number of cannon.	Total number of carriages.
	42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	10-inch columblads.	8-inch columblads.	10-inch sea-coast howitzers.	8-inch sea-coast howitzers.	8-inch guns.	24-pounders.	18-pounders.	12-pounders.	8-inch howitzers.	13-inch, heavy.	10-inch, heavy.	10-inch, light.	8-inch, light.	16-inch, stone.	24-pounders, cohorn.		
Castle Williams, New York.....	26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	44	26
Fort Columbus, New York.....	50	44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	89	120
Fort Mifflin, Pennsylvania.....	9	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	88	37
Fort McHenry, Maryland.....	37	20	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	80	69
Fort Monroe, Virginia.....	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	138	169
F. rt Moultrie, South Carolina.....	...	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	36	6
Castle Pinckney, South Carolina.....	...	...	10	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	22	18
Fort Sumter, South Carolina.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	41	41
Fort McRee, Florida.....	...	...	30	7	...	2	...	10	...	...	...	...	10	...	...	...	...	...	...	...	17	17
Fort Ontario, New York.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27	27
Battery Hudson, Staten island, N. Y.	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	10
Battery Morton, Staten island, N. Y.	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27	27
South Battery Governor's isl'd, N. Y.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	10
Fort Pickens, Florida.....	10	46	6	14	...	...	...	12	...	...	...	...	...	...	...	...	4	...	...	...	190	181
Fort Washington, Maryland.....	...	...	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30	30
Fort Gibson, Ellis island, N. York.	...	10	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	12	12
Fort Niagara, New York.....	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	6
Fort at New Bedford harbor, Mass.	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	9
Fort Griswold, Connecticut.....	12	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	16
Fort Trumbull, Connecticut.....	14	13	...	3	8	1	17	6	...	...	...	...	...	...	...	...	...	...	...	...	64	64

Fort Wood, New York.....	12	38	31	26	3	19	57	10	38	6	21	9	74	54	2,835
Fort Adams, Rhode Island.....	30	18	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Lafayette, New York.....	17	17	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Hamilton, New York.....	20	20	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Constitution, New Hampshire.....	20	25	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Independence, Massachusetts.....	20	26	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Preble, Maine.....	12	1	10	8	15	23	38	6	21	9	74	54	2,835		
Fort Macon, North Carolina.....	6	12	10	8	15	23	38	6	21	9	74	54	2,835		
Fort Caswell, North Carolina.....	12	6	10	8	15	23	38	6	21	9	74	54	2,835		
Fort Pulaski, Georgia.....	37	14	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Morgan, Alabama.....	12	12	10	8	15	23	38	6	21	9	74	54	2,835		
Fort Jackson, Louisiana.....	15	15	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Wood, Louisiana.....	15	15	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Pike, Louisiana.....	10	10	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort St. Philip, Louisiana.....	11	10	5	3	2	4	8	4	4	4	4	4	4	4	
Fort Barranca, Florida.....	10	10	12	10	8	15	23	38	6	21	9	74	54	2,835	
Battery Bienvenue, Louisiana.....	4	4	12	10	8	15	23	38	6	21	9	74	54	2,835	
Tower Dupré, Louisiana.....	20	4	6	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Schuyler, New York.....	16	16	12	10	8	15	23	38	6	21	9	74	54	2,835	
Fort Marion, Florida.....	26	367	474	31	26	3	19	57	10	38	6	21	9	74	54
Total at the forts.....	1	366	231	12	10	8	15	23	38	6	21	9	74	54	2,835
Total at the arsenals.....	20	20	12	10	8	15	23	38	6	21	9	74	54	2,835	
In California, not known whether in forts.....	27	753	725	43	36	11	34	80	10	6	21	9	74	54	2,835
Grand total.....															

H. K. CRAIG, Colonel of Ordnance.

ORDNANCE OFFICE, Washington, November 13, 1851.

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	BARBETTE CARRIAGES.									SIEGE CARRIAGES.				MORTAR BEDS.						Total number of cannon.	Total number of carriages.		
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Castle Williams, New York.....	26																					44	26
Fort Columbus, New York.....		50	44																			89	120
Fort Mifflin, Pennsylvania.....		9	28																			68	37
Fort McHenry, Maryland.....		37	20					2														80	69
Fort Monroe, Virginia.....		39															3					138	169
Fort Moultrie, South Carolina.....								6														35	6
Castle Pinckn-y, South Carolina.....			10					4														22	18
Fort Sumter, South Carolina.....																						41	41
Fort McRee, Florida.....			30	2				10					10									124	124
Fort Ontario, New York.....				7																		17	17
Battery Hudson, Staten island, N. Y.	27																					37	27
Battery Morton, Staten island, N. Y.	10																					10	10
South Battery Governor's isl'd, N. Y.	6																					5	6
Fort Pickens, Florida.....		10	46	6	14			12									4					196	181
Fort Washington, Maryland.....			30																			30	30
Fort Gibson, Ellis island, N. York.....	10							2														12	12
Fort Niagara, New York.....				6																		6	6
Fort at New Bedford harbor, Mass.....			9																			9	9
Fort Griswold, Connecticut.....	12	3																				16	16
Fort Trumbull, Connecticut.....	14	13		3	3	1	17	6														64	64

[illegible]

H. K. CRAIG, Colonel of Ordnance.

ORDNANCE OFFICE, Washington, November 13, 1851.

C.—Statement of the cannon and carriages at the forts, &c.—Continued.

Names of forts.	BARRIETTE CARRIAGES.								SIEGE CARRIAGES.				MORTAR BEDS.						Total number of cannon.	Total number of carriages.			
	42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	10-inch columblads.	8-inch columblads.	10-inch sea-coast howitzers.	8-inch sea-coast howitzers.	8-inch guns.	24-pounders.	18-pounders.	12-pounders.	8-inch howitzers.	13-inch, heavy.	10-inch, heavy.	10-inch, light.	8-inch, light.			16-inch, stone.	24-pounders, cohorn.	
Castle Williams, New York.....	26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	44	26
Fort Columbus, New York.....	---	50	44	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	89	120
Fort Mifflin, Pennsylvania.....	---	9	28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	68	37
Fort McHenry, Maryland.....	---	37	20	---	---	---	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	80	69
Fort Monroe, Virginia.....	---	39	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	138	169
Fort Moultrie, South Carolina.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	35	6
Castle Pinckn-y, South Carolina.....	---	---	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	22	18
Fort Sumter, South Carolina.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	41	41
Fort Mifflin, Florida.....	---	---	30	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	124	124
Fort Ontario, New York.....	---	---	---	7	---	---	---	---	---	---	---	---	10	---	---	---	---	---	---	---	---	17	17
Battery Hudson, Staten island, N. Y.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	27	27
Battery Morton, Staten island, N. Y.....	---	---	---	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	10
South Battery Governor's Isl'd, N. Y.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5	5
Fort Pickens, Florida.....	---	---	10	46	6	14	---	---	---	---	---	---	---	---	---	---	---	4	---	---	---	196	181
Fort Washington, Maryland.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30	30
Fort Gibson, Ellis Island, N. York.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12	12
Fort Niagara, New York.....	---	---	---	6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6	6
Fort at New Bedford harbor, Mass.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9	9
Fort Griswold, Connecticut.....	---	---	12	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16	16
Fort Trumbull, Connecticut.....	---	---	14	13	---	8	1	17	---	---	---	---	---	---	---	---	---	---	---	---	---	64	64

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H. K. CRAIG, Colonel of Ordnance.

ORDNANCE OFFICE, Washington, November 13, 1861.

D.

Report of General J. G. Totten.

WASHINGTON, November 1, 1851.

SIR : In obedience to your orders of April 17, I have the honor to present my views and opinions on the subject embraced in the first of the resolutions adopted by the House of Representatives on the 3d March last in relation to the permanent fortifications of the country.

I shall successively take up the points which you have made particular subjects of inquiry, though I foresee that I may need your indulgence for some time, using a rather broad license in connecting them with collateral topics. I hope, also, to have your indulgence for occasionally quoting from a report on national defence, made by a board of officers to the Secretary of War on the 10th of May, 1840. I have the less hesitation in thus quoting since that report was written by myself, and its statements and opinions have been confirmed by all my subsequent meditation on the subject. As I shall, however, repeat herein a part only of what is therein set forth, and as that report goes into a pretty full discussion of the whole subject, and was concurred in by several experienced officers, whose countenance and support gives to it, indeed, all its authority, I would respectfully urge the whole report upon your attention. It is to be found in House Document No. 206, 1st session 26th Congress.

The remarks made by Mr. Secretary Poinsett, when laying the report before Congress, as given in the same document, seem to me worthy of full consideration.

I do not consider it necessary to urge the point that wars may again visit us, and wars moreover with powerful nations. All the questions of the Secretary assume this as a possibility at least, as do the resolutions of Congress calling for this inquiry. How much soever a nation may love peace, and however well disposed to preserve it by moderation, justice, and impartiality, it is not less true now than it ever has been that the interests and honor of nations cannot always be made to run in parallel courses, and that jostling and interference are the more apt to occur where there is the closer proximity by position or by the relations of trade and business.

Within the last fifteen years four or five times has this country, owing to some question suddenly rising into importance, been surprised to find itself on the very verge of war with the most powerful nations of the earth. And the latent spirit, not to say belligerent, aptitude on either side, has not always been quite satisfied that the concessions made for peace have not purchased it at too high a price. The point of honor will always, when really touched, as it ever has done, keep with nations as with men, the point of interest in subjection. And a hackneyed adage shows that it is ever deemed not less important with nations than with men that there should at all times be obvious preparation and readiness to defend both honor and interest. It is, therefore, notwithstanding certain theories of the day and public declarations, that the age of strife and warfare has passed away, only reasonable and prudent to assume that a state of war may exist, and to inquire in what way a powerful enemy may wage it against us. He may do so—

1. By attacking our commerce and navigation upon the ocean. As, however, no military preparation on the shores can avert this danger, and the means of meeting it must be purely naval, these means do not now fall under consideration ; or,

2. By assailing some one or more important point or points of the coast with

a large military and naval force, with a view to immediate damage or more or less protracted occupation; or,

3. By suddenly appearing with a large squadron of vessels before our principal commercial cities, laying them under contribution, and burning or carrying off the shipping, and by making powerful attacks upon our navy yards in order to destroy those establishments; or,

4. By attacks upon smaller towns and establishments of the coast with small squadrons or single vessels, or with privateers, capturing the shipping therein, and levying contributions, and by like means intercepting the interior commerce within the bays, sounds, and estuaries of the coast; these lesser enterprises being often conducted under the countenance and support of considerable fleets.

The danger may take any of these forms, or all of them. And against any or all of these a naval force of equal or greater strength, if it could with any certainty be found at hand, might be an adequate resort, though it would not be the most economical. But, in the first place, we are yet and shall be for years inferior in our naval preparation to nations with which we are likely to be in conflict; and next, if we were even far superior, it would be impossible to have, at each of the points to be guarded, a naval force sufficient to secure it, because a hostile squadron of twenty or thirty sail of the line and war steamers, would fall with equal ease on either of the important points, and could with no more certainty be expected at one than at another; so that, to resist successfully, we must be ready at each and all, with a force not less than that of the enemy; if less, an unavailing resistance would but augment the calamitous consequences.

An enemy's squadron, assembled at Halifax or Bermuda, must be equally looked for at every important point from the Penobscot to New Orleans, inclusive, for it could with equal ease fall upon either. The same would be true, moreover, of such a force assembled in any Atlantic port of Europe.

Having seen the modes in which we may be assailed, and that no navy we are likely to possess can supply the requisite guarantees, the first question of the Secretary of War leads us to inquire, to what extent we may be aided by our numerous and multiplying railroads. This question is in the following words:

How far the invention and extension of railroads have superseded or diminished the necessity of fortifications on the seaboard?

If there are cases in which fortifications will be aided by these roads—cases in which works of less strength and efficiency may be relied on, because such aid can be afforded in moments of need—there are many others in which any such aid as they could supply would be useless, and many also to which railroads can have no application.

In very rare cases, a fort lying near existing or probable railroads may also occupy a position exposing it to a besieging army. In such a case, undoubtedly, a railroad would have a direct influence; and the strength and cost of the fort would of course be materially lessened, in consequence of the rapidity with which the railroad would bring succor.

In most cases, however, forts are not liable to a siege, nor to any attack that will keep an enemy more than a few hours before them; they are required, by sudden action, to defend the passage of a river or a channel leading to important objects; or to prevent an enemy's squadron from seizing, or cannonading, or bombarding ships, navy yards, cities, &c., duties to be accomplished only by heavy artillery in its various forms. The question whether the various forms of heavy artillery will be better placed for this purpose within forts or vessels, will be examined hereafter; but that this artillery, however arranged, is the only effectual instrument of defence, admits no doubt. This artillery being in adequate numbers, properly placed, sufficiently manned, out of the reach of seizure by the enemy, and too powerful to be silenced by him—all conditions indispensable, whether in communication with railroads or not—is prepared with

all useful accessories and ready for its great functions, independent of any aid to be supplied from without.

It happens, moreover, that few of the points necessarily occupied for this defence are so situated as to be benefited by railroads, unless the latter be constructed with the exclusive purpose of communicating with them; and some are wholly unapproachable by such means, were they ever so necessary.

As it is undoubtedly true that these communications, even as they now exist, may bring with much rapidity militia and volunteers from the interior, and from lateral sources, to many points of the coast, it may be worth while to examine a little more in detail, whether such use could be made of these superadded numbers as to justify dependence on them for defence against a powerful enemy.

Suppose a hostile fleet to be in front of the city of New York, which nothing would prevent if the channels of approach were not fortified; in what way could the 100,000 or 200,000 new men poured into the city and environs by railroads, although armed with muskets and field-pieces, aid the half million of people already there? It seems to me very clear that these additional forces would, like the population proper of the city, be utterly powerless in the way of resistance, with any means at their command; and if resistance were attempted by the city, would but serve to swell the list of casualties, unless they should at once retreat beyond the range of fire. If the enemy's expedition were intended, according to the second supposed mode of attack, for invasion or occupation for some time, of a portion of the country, then in many places this resource of railroads would be of value; because then the duty of defence would fall upon the army and militia of the country; and these communications would swell their numbers.

But of all the circumstances of danger to the coast, this chance of an attempt by an enemy to land and march any distance into a populous district, is least to be regarded, whether there be or be not such speedy mode of receiving reinforcements, and our system of fortifications has little to do with any such danger. In preparing against maritime assaults the security of the points to be covered is considered to be greatly augmented, whenever the defence can be so arranged as to oblige an enemy to land at some distance; for the reason that opportunity is thereby allowed, in the only possible way, for the spirit and enterprise of the people to come into play.

Instead of being designed to prevent a landing upon any part of the coast, as many seem to suppose, and some to allege in proof of extravagant views on the part of the system of defence, the system often leaves this landing as an open alternative to the enemy, and aims so to cover the really important and dangerous points as to necessitate a *distant* landing and a march towards the object through the people. It is because the expedition would otherwise easily accomplish its object, without landing and without allowing the population to partake in the defence, that the fortifications are resorted to. For instance, without Fort Delaware, or some other fort low down in Delaware bay, an enemy could place his fleet of steamers in front of Philadelphia by the time his appearance on the coast had been well announced throughout the city. And in spite of all New Jersey, Delaware, and lower Pennsylvania he could levy his contributions and burn the navy yard shipping, and be away in a few hours. But being obliged, by the fort above mentioned, to land full forty miles below the city, the resistance to his march may be safely left to the courage and patriotism that will find ample time to array themselves in opposition.

A distant landing is deemed to be a great advantage to the defence in all cases; and in populous districts, if the forts be sufficient for this particular duty, it makes the security complete.

It is no part of the task assumed by the system of fortifications to guard against the invasion and protracted occupation of a well-peopled district, or of a point around which the forces of the country could be soon rallied. In such

attempts railroads would accelerate the issues; but even the common modes of conveyance would soon bring forces enough to overwhelm them.

But there are places important in themselves, or necessary to the general welfare, that have not the advantage of a large population at hand or within call, and which may nevertheless be very tempting objects to an enterprising enemy. The navy yard at Pensacola will, for instance, in time of war, be of infinite value in reference to the commerce of the Gulf of Mexico. Its destruction would therefore be a great object with a maritime enemy, and it has accordingly been so fortified as to be safe from a *coup de main*, or, at any rate, will be so when the little remaining to do is complete. A hostile expedition adequate to the reduction of these defences would, however, be able to exclude all relief approaching laterally from the Mississippi, and there is no help to be supplied from the neighborhood, and none but very tardy succor to come from the interior; so that an enemy would find time to reduce the forts established on the islands at the mouth of the bay.

This case illustrates one aspect of the influence of railroads on the coast defence of the United States. While there is no such road by which succor can come from the interior, the security of the harbor and navy yard of Pensacola must depend wholly on the strength and state of readiness of the defences, naval and military, at the mouth of the harbor, there being no neighboring population; and these defences will be liable to a somewhat prolonged as well as powerful attack, giving time for sieges of several days duration.

With a railroad extending into the interior of Alabama, an attacking force, though large, would have to confine itself to comparatively brief and hurried operations, even though a short siege may be considered out of the question. But although such a railroad were made, a sudden onslaught would suffice for the destruction of the naval establishments (if there were no fortification) whenever the attacking naval force were larger than that which might be present for defence; that is to say, whenever we had not a large squadron present. As before said, the railroad can supply none of the means of resisting such attacks.

Without fortifications no existing or projected railroad would do anything towards the protection of New Orleans against a squadron of armed steamers; and not more could such communications do for Mobile or for the hundreds of large vessels that lie in the mouth of Mobile bay awaiting cargoes. There are, moreover, very great points in our system of sea-coast defence that derive their importance much more from their general relation to and bearing on general commerce and the security of large portions of the coast than from local interests. Narraganset road, Delaware Breakwater harbor, Hampton road, Cumberland sound, (Georgia,) Key West, and the Tortugas, are points of this character; and neither of these would derive material aid from any existing or probable railroad communications. It is proper here to say something of these relations.

Narraganset bay.—As a harbor this is acknowledged by all to be the best on the whole coast of the United States, and it is the only close man-of-war harbor that is accessible with a northwest wind, the prevailing and most violent wind of the inclement season. Numerous boards and commissions—sometimes composed of naval officers, sometimes of army officers, sometimes of officers of both services—have at different times had the subject of this roadstead under consideration, and all have concurred in recommending in strong terms that it be made a place of naval rendezvous and repair, if not a great naval depot—one or more of these commissions preferring it for the latter purpose to all other positions. These recommendations have not been acted on, but it is next to certain that a war would force their adoption upon the government. With the opening of this anchorage properly defended, hardly a vessel-of-war of ours could come, either singly or in small squadrons, upon the coast in the boisterous season without arming at this port, on account of the comparative certainty of

an immediate entrance; and this would be particularly the case with vessels injured by heavy weather, or in conflict with an enemy—with vessels bringing in prizes, or pursued by a superior force.

The use of the port would almost necessarily bring with it the demand for the means of repairing and refitting; and the concentration of these upon some suitable spot would be the beginning of a permanent dock yard.

For the same reason that ships-of-war would collect here, it would be a favorite point of rendezvous for privateers and their prizes, and a common place of refuge for merchantmen.

From this, as a naval station, the navigation of Long Island sound and the communication between this and Martha's Vineyard sound or Buzzard's bay might be well protected; New London harbor would be covered; this navy yard would command southwardly, as that from Hampton roads northwardly, the great inward curve of the coast between Cape Cod and Cape Hatteras, the influence of which command over the blockading operations of an enemy will be apparent when it is considered that the only harbors of refuge left to him will be the Delaware, Gardiner's, and Buzzard's bays and Martha's Vineyard sound.

The bays just mentioned belong to the class which, being too wide for complete defence by batteries, must call in such auxiliary defence as the navy may supply; and, in reference to their defence by these means, nothing can be more important than the fortifications of Narraganset roads, because all but Delaware bay, including an anchorage for ships-of-war under Block island, would be commanded by a single squadron of those floating defences lying in these roads. To a squadron of steam batteries, for instance, lying under the fortifications, it would be a matter of little consequence into which of the above anchorages an enemy should go, all being within reach of three or four hours, and some within sight. We will here observe, by the way, that this use of floating defences is in accordance with the principle before insisted on. They are not expected to close the entrance into these several bays—that would require a squadron for each at least equal to the enemy's; but as the enemy goes in merely for rest or shelter, and there is no object that he can injure, he may be permitted to enter, and our squadrons will assail him only when the circumstances of wind, weather, &c., give all the advantages to the attack. The fortification of Narraganset roads is, therefore, in effect, a most important contribution towards the defence of all the neighboring anchorages. But the same properties that make Narraganset roads so precious to us would recommend them to the enemy also, and their natural advantages will be enhanced in his eyes by the value of all the objects these advantages may have accumulated therein.

If this roadstead were without defence, an enemy could occupy it without opposition, and by the aid of naval superiority form a lodgment on the island of Rhode Island for the war. Occupying this island with his troops, and with his fleets the channels on either side, he might defy all the forces of the eastern States; and while from this position his troops would keep in alarm and motion the population of the east, feigned expeditions against New York or against more southern cities would equally alarm the country in that direction; and thus, though he might do no more than menace, it is difficult to estimate the embarrassment and expense into which he would drive the government.

It has been alleged that similar consequences would flow from the occupation of other positions, (such for instance as are afforded in the bays just mentioned,) and that therefore the defence, in a strong manner, of Narraganset roads is useless. Even allowing that there are other inaccessible positions whereon an enemy might place himself, is it a reason, because the foe can, in spite of us, possess himself of comparatively unsafe and open harbors, that we should not apply to our own uses, but yield up to him the very best harbor on the coast;

that we should submit to capture and destruction the valuable objects that accumulate in consequence of the properties of the harbor?

But it is believed that none of the outer and wider harbors will answer for such an establishment as we have supposed, nor for any other purpose than an occasional anchorage for ships-of-war, and for these reasons, among others: that although ships-of-war might possibly ride in these broad waters at all seasons, it would seem to be a measure of great temerity for transports to attempt it, except in the mildest seasons; and there can be but little doubt that a hostile expedition would resort to no harbor as a place of rendezvous, unless it afforded sure protection to its transports, these being the only means by which ulterior purposes could be executed, or final retreat from the country effected.

If, moreover, Narraganset roads became a naval station, or at least the station of a floating force designed to act against these outer waters, such an establishment by an enemy on other positions would at once be put upon the defensive and require the constant presence of a superior fleet, thus measurably losing the object of the establishment. Independent of deficient qualities as harbors, however, none of these bays would answer our purposes: First, because they cannot be securely defended; and second, because they are difficult of access from the main, the communication with them being liable to interruption by bad weather, and liable to be cut off by the enemy.

It seems quite evident that the circumstances involved in the occupation and defence of Narraganset roads will not be materially changed by the facilities of railroad communications; so far as numbers can aid in defensive arrangements they could be supplied in due time and to the extent needed, by the surrounding district and common modes of conveyance.

Delaware Breakwater harbor.—In the long stretch of coast between New York bay and the Chesapeake, a distance of about three hundred miles, there is no other entrance from the ocean (except for small vessels) than that at the mouth of Delaware bay. This circumstance led the commercial men of the country to call, with great unanimity and earnestness, for the creation at this place, which was without a safe anchorage and was full of dangerous shoals, of an artificial harbor. This call had reference mainly, it is true, to protection in stress of weather; but for the same reason, namely, the great distance on either hand to any place of shelter, it must become a place of refuge from an enemy. Vessels near that coast, whether bound north or south, will be liable to be cut off from other refuge and forced into this only entrance; and vessels bound up the Delaware must seek it, of course; so that as this artificial harbor provided by the government must be resorted to in time of war for security of both kinds, thereby becoming a place of rendezvous, it will be an attractive point for an enemy. It would, moreover, since it now yields a safe anchorage, most certainly become the habitual resort of an enemy's vessel cruising on this coast, in order to command the great channel of commerce that sweeps in near these capes.

These considerations show the necessity of defending this harbor, and its secure defence would afford the further great advantage of providing a port whence our cruisers, whether steam or sail vessels, might keep watch over this same channel of commerce whenever they were not confined within the defences by the actual presence of a superior enemy.

This case also is one in which the objects in view do not depend on the use of railroads; they can all be achieved without such aid. And it is also a case in which railroads of themselves would do nothing, and in which nothing could be dispensed with because of their existence. If the enemy landing an army were to lay siege to a fort on the shore side of the harbor, then a railroad would certainly be useful in expediting the arrival of succor. But though an enemy would certainly use this harbor for the purposes above stated, if it were not defended, it is not to be supposed that for the conquest of these advantages he would bring a great land expedition that might find much richer booty else-

where. Forts capable of resisting a *coup de main* would no doubt, therefore, fulfil their purpose and be respected, and accordingly no siege is to be anticipated, and any auxiliary force that great caution might demand could be easily and speedily forwarded by the numerous and fast steamers on the bay.

Hampton roads and Chesapeake bay.—The board of naval officers and engineers intrusted with the selection of sites for a great northern and a great southern naval depot, recommended, in their joint reports of 1819 and 1820, Burwell's bay, on James river for the one, and Charlestown, in Boston harbor, for the other. They also recommended Boston harbor and Narraganset bay at the north, and Hampton roads at the south, as chief naval rendezvous. In these reports the commissioners entered at large into the consideration of all the matters relating to these important objects, and reference is now made to those reports for many interesting details.

Such an expansion has, however, since then been given to the present navy yard at Gosport, (opposite Norfolk,) that there is little probability of any other position on these waters being occupied for such purposes.

The great importance of retaining Hampton roads during a war, and of covering the navy yard, is conceded on all hands. But the bearing of this harbor upon the general defence of Chesapeake bay is not generally understood.

Being the great naval depot station and rendezvous of the southern coast, it may be safely assumed that this harbor, during war, will never be without a number of ships-of-war, some ready for sea, others just returned from sea, and others held in condition to be suddenly despatched. This being so, should an enemy with a small or moderate force venture up Chesapeake bay, with designs upon any of the rivers, harbors or towns, his capture would be inevitable by the squadrons of sailing and steaming vessels issuing upon his rear from Hampton roads. This certain result would keep back any enemy from any such predatory venture. If, then, we provide adequate defences for the more important places upon the bay and its tributaries, there will remain no temptation to large expeditions, and the peace of this wide-spread navigable water and the safety of the great amount of business and commerce traversing it in all directions will be secured. Thus, by covering the anchorage of our squadron, the defence of Hampton roads become to a most important extent the defences of all the upper waters.

The following very important relation existing between the defences of Hampton roads and the security of both Norfolk and the navy yard, independent of closing the channel to those places, is also not generally understood, and has been overlooked by cities.

If we suppose no defences at the mouth of the roadstead, or only such as can be disregarded or easily silenced, an enemy might debark his troops in Lynnhaven bay and despatch them against Norfolk, while his fleet would pass up the harbor to the vicinity of the town, not only covering the flank of his troops, but landing parties to turn any position that might be taken by the army attempting to defend the place; or, instead of landing in the bay, he might, at his option, land the main body quite near to Norfolk, and having possession of James river, he would prevent the arrival of any succor in steamboats or otherwise by that channel.

There are two or three defiles on the route from Lynnhaven bay to Norfolk, caused by the interlocking of streams, that with the aid of field-works would possess great strength; and being occupied in succession, would undoubtedly delay, if not repulse, an enemy assailing them in front. Since the naval depot seems fixed at Gosport, these must indeed be chiefly relied on for its security from land attacks, and timely attention must be given on the breaking out of a war, to the occupying of these defiles with appropriate defences. These positions, however, possess no value whatever if they can be turned; and without adequate fortifications at the outlet of Hampton roads, there would seem to be

no security for Norfolk or the navy yard, except in the presence of a large military force.

On the completion of the defences at the mouth of Hampton roads, the circumstances will be very different. Then those defiles must be attacked in front, because no part of the enemy's force can be landed above the mouth of the roads. But this is not all. The moment an enemy advances towards Norfolk from this point of debarkation, his communication with his fleet will be jeopardized; because, as the defiles do not require a large body to defend them against an attack in front, the greater part of the reinforcements arriving from above by way of the river may be landed upon his flanks or in his rear. An offensive land movement by the enemy, under such circumstances, could be justified only in the case of his finding an entire want of preparation caused by the unexpected commencement of hostilities. In connexion with this disposition for defence, it may be expedient on the breaking out of a war, to throw up a field-work on the shore opposite the position of Fort Calhoun, which would besides contribute to the exclusion from the roadstead of vessels of small draught.

The above remarks show that the fortifications in progress are not less necessary to the security of the navy yard and the city of Norfolk from a land attack than from an attack by water; and that both these important functions are superseised to the task of defending the only good roadstead of the southern coast, and of contributing in a very important degree towards the defence of the Chesapeake bay.

As in the case of Narraganset roads, it has been objected to this system of defence, that although it may shut up this anchorage, it leaves others in this region open. May we suppose, then, that if there were no other than this harbor, its defence would be justifiable? If so, it would seem that the objection rests on the principle that, in proportion as nature has been bountiful to us, we must be niggardly to ourselves; that having little, we may cherish it; but having much, we must throw all away.

The same criticism complains of the unreasonable magnitude of one of these works, (Fort Monroe,) and it is conceded that there is justice in the criticism. But it has long been too late to remedy the evil. It may not, however, be improper to avail of this opportunity to remove from the country the professional reproach attached to this error. When the system of coast defence was about to be taken up, it was thought best by the government and Congress to call from abroad a portion of that skill and science which a long course of active warfare was supposed to have supplied. Fort Monroe is one of the results of that determination. It was not easy, probably, to come down from the exaggerated scale of warfare to which Europe was then accustomed; nor for those who had been brought up where wars were often produced and always magnified by juxtaposition or proximity, to realize to what degree remoteness from belligerent nations might diminish military means and qualify military objects. Certain it is, that this experiment, costly as it was in the case of Fort Monroe, would have been much more so but for the opposition of some whose more moderate opinions had been moulded by the circumstances and wants of our own country.

The mistake is one relating to magnitude, however, not to strength. Magnitude in fortification is often a measure of strength, but not always, nor in this instance. Fort Monroe might have been as strong as it is now against a water attack, or an assault, or a siege, with one-third its present capacity, and perhaps at not more than half its cost. I do not think this work too strong for its position, nor too heavily armed; and as the force of the garrison will depend mainly on the extent of the armament, the error which has caused an excess in the first outlay will not involve much useless expense after completion.

The railroad coming down from the interior of the country to Norfolk navy yard might unquestionably render service in bringing forward troops in the

event of a powerful and persevering land attack on the defences of Norfolk and the navy yard, and in like manner useful reinforcements might arrive rapidly in the steamers of James river. But we have seen that without the defences at the mouth of the roads there would be no time nor opportunity for any such force to arrive, or to act when arrived. The enemy would proceed from sea directly up to his object, and need not necessarily lose a tide nor land a man. If a sudden attack with a large squadron of armed steamers—for this great naval depot presents an object worthy of a great expedition—is to be repelled, it will not be by crowds of volunteers rushing in from the country with muskets and rifles on their shoulders, but by fortifications of some sort, or by naval means; and if by the latter, by a force not materially less than the enemy's.

Cumberland sound, at the mouth of St. Mary's river.—It is an important principle, bearing peculiarly on the defence of the whole southern coast, that on a shore possessing few harbors it is at the same time more necessary to preserve them all for our own use, and more easy to deprive an enemy of that shelter without which a close blockade cannot be maintained. This principle is enforced in the instance of our southern coast by the two following weighty considerations, viz: first, its remoteness from the naval rendezvous, the Chesapeake, which is, on a mean, six hundred miles distant, and to leeward both as to wind and current; and second, its being close upon the larboard hand as they enter the Atlantic of the great concourse of vessels passing at all seasons through the Florida channel. While, therefore, this part of the coast, from the concentration of vessels here, is in great need of protection of some sort, naval aid can be extended to it only with difficulty, and at the risk of being cut off from all retreat by a superior enemy.

All the harbors accessible to vessels-of-war on this part of the coast will sooner or later need defences, because otherwise they will be seized by an enemy, in order, for one thing, to paralyze the valuable commerce that circulates within the rivers, sounds, and internal lateral communications. The products of a considerable portion of Georgia find outlet only by these channels. Perhaps it may require a war to demonstrate the necessity and advantage of such protection; but there are reasons already alluded to, and of much weight, for securing the mouth of Cumberland sound at any rate, independent of those just mentioned. One of these is particularly important, namely, the situation of this point with respect to the commerce flowing through the Gulf of Mexico. Every vessel bound northward from the Gulf must pass close up by Cape Cañaveral before she can bear away clear of the Matinilla reef, and hence two or three cruisers may take such positions at this outlet that all passing vessels will be seen. While we occupy Cumberland sound our own steaming or sailing cruisers can hold these posts permanently and fearlessly, assured of a place of refuge from a superior enemy.

When the best and deepest of these Georgia entrances shall be fortified, the operation of investing the coast and watching the great outlet of commerce through the Florida passage will be a difficult and hazardous one to an enemy, to whom no perseverance or skill can avail to maintain a continuous blockade, while on the part of our small vessels-of-war, steam frigates, and privateers, the same sort of supervision will be at all times easy and safe. In the meantime the fortifications of Cumberland sound alone will enable us, with the help of a floating force, to protect the whole of this part of the coast from all small expeditions, and to harass and disturb the operations of larger ones, without endangering the safety of our own cruisers.

This sound was occupied by the British during the war of 1812, and Cumberland island made headquarters, a great collateral purpose being, as it would again be, to excite the slaves to insurrection, if possible, at least to desertion.

No railroads now exist to influence in any way the security of this harbor, but both railroads and canals have been talked of, which would greatly enhance

the value of defences on the Georgia coast, and especially those of Cumberland sound.

Key West and the Tortugas.—These are the first important positions that present themselves on doubling round Cape Florida into the Gulf of Mexico.

Strong opinions have been several times expressed in favor of these fine harbors, and I beg leave particularly to refer to a letter from Commodore Rodgers to the Secretary of the Navy, July 3, 1829, (Senate documents, 1st session 21st Congress, vol. I, No. 1, page 236,) and letter from the Secretary of the Navy, March 25, 1830, (Senate documents, 1st session 21st Congress, vol. II, No. 111, page 1.)

A naval force designed to control the navigation of the Gulf could desire no better position than Key West or the Tortugas. Upon the very wayside of the only path through the Gulf, it is at the same time well situated as to all the great points therein. It overlooks Havana, Pensacola, Mobile, the mouths of the Mississippi, and both the inlet and the outlet of the Gulf.

The Tortugas harbor and that of Key West affords perfect shelter for vessels of every class, with the greatest facility of ingress and egress. And there can be no doubt that an adversary in possession of large naval means would with great advantage make them his habitual resort and his point of general rendezvous and concentration for all operations on this sea. With an enemy thus posted, the navigation of the Gulf by us would be eminently hazardous, if not impossible, and nothing but absolute naval superiority would avail anything against him. Mere military means could approach no nearer than the nearest shore of the continent. There are no harbors in the Gulf at all comparable with these that an enemy could resort to with his large vessels. To deprive him of these would, therefore, be interfering materially with any organized system of naval operations in this sea. The defence of these harbors would, however, do much more than this. It would secure to our own squadron, even should it be inferior, the use of these most valuable positions, and would afford a point of refuge to our navy and our commerce at the very spot where it would be most necessary and useful.

I forbear to enlarge on this point, merely adding that certain and complete defence will be easily secured, and that we shall thereby possess ports of refuge in the middle of the Gulf whenever we have to fly, and points of rendezvous and refreshment in the very midst of all passing vessels whenever we hold the mastery. Every vessel that crosses the Gulf of Mexico passes within sight of the two forts commenced under the sanction of Congress and now in progress, one at Tortugas, and one at Key West.

It is needless to say that with the possession of these advanced posts, and with the control of the commerce of the Gulf thereby insured, no railroads upon the main can have any relation. The forts must rely solely on their own efficiency and power of resistance. Happily the local circumstances allow these conditions to be easily secured.

I could adduce many other illustrations of the truth of the assertions made in the commencement of these remarks, that though occasional benefit will result to the system of fortification on the seaboard from the construction of railroads, they in general will have little or no bearing on the immediate means of defence. These, whether they be forts or ships, must be put in a state of preparation and kept so by the use of means that railroads do not supply, or at least that can be well supplied without them.

Numerous and facile communications, whether by railroad or steamers, or common roads, are important undoubtedly to the general activity and vigor of war, whether offensive or defensive; but it is as *communications* that they are useful, not as being of themselves instruments of warfare, or as supplying any that can be substituted for ships or forts.

I ought here to advert to the idea often announced, though always vaguely and in general terms, namely, that by the help of these railroads large bodies of men may be thrown from the interior of the country upon the exposed points of the coast, and there erect, and arm, and serve temporary batteries adequate to repel any maritime attack.

If we have waited for the opening of a war to do this, our enemy, who knows the fact as well as we, will surely not allow time for the completion even of such works as these. And in adopting this policy, we undertake to afford a protection to the country in the first days and weeks of the war, that nations experienced in warlike affairs have considered as hardly accomplished after years and years of labor during peace.

In many important cases, the contemplated batteries could not be erected hastily, because they would have to be supported by piling and grillage; and in others, even the very sites would have to be raised out of the water. The inferiority in efficacy and equipment of such batteries, when erected, would have to be compensated by an increased number of guns; but in many instances, a good defence could only be made in positions where there is not room for the requisite number of guns, except by placing them tier above tier, an arrangement wholly inconsistent with sudden preparation.

But even if the sudden arrival of a number of men brought by railroad could supply the want of duly-prepared batteries, there are important defensive points to which railroads do not approach, and are not likely to approach. And it also happens that wherever such railroads reach the coast, it is already peopled beyond all probable wants for laborers upon sea-coast batteries. If such batteries were required to be erected as speedily as possible at Boston, New York, Philadelphia, Baltimore, Charleston, Savannah, &c., they could be much sooner and better executed by calling in the laborers and mechanics of these cities, than by relying on the heterogeneous aid of regiments of volunteers and drafted militia.

The second question of the honorable Secretary is in these words: "*In what manner and to what extent the navigation of the ocean by steam, and particularly the application of steam to vessels-of-war and recent improvements in artillery and other military inventions and discoveries, affect the question?*"

And the third question, which it will be convenient to consider in connexion with the second, is in these words, namely: "*How far vessels-of-war, steam-batteries, and ordinary merchant ships and steamers, and other temporary expedients, can be relied upon as a substitute for permanent fortifications for the defence of our large seaports?*"

The application of steam to vessels-of-war acts upon the question of sea-coast defence, both beneficially and injuriously. It acts injuriously in several ways: but chiefly, first, by the suddenness and surprise with which vessels may fall upon their object, and pass from one object to another in spite of distance, climate, and season; and secondly, by their ability to navigate shallow waters.

The first property, by which squadrons may run into our harbors, outstripping all warnings of their approach, affords no chance for impromptu preparations; accordingly, whatever our preparations are to be, they should precede the war. It seems past all belief that a nation having in commission—as France and England always have—a large number of war-steamers ready for distant service in twenty-four hours, receiving their orders by telegraph, capable of uniting in squadrons, and in two or three days at most speeding on their several paths to fall upon undefended ports—it is not to be expected, I say, that they should delay such enterprises until temporary resorts could be got ready to receive them. And yet there are those who insist that we should leave defensive measures to a state of war—that we should let the day supply the need.

Inadequate as all such measures must prove, there would not be time to arrange even these. By the second property, due to their light draught of water, these vessels will oblige the defence to be extended in some form to passages,

or channels, or shoals, that before were adequately guarded by their shallowness. The bars at the mouth of the Mississippi formerly excluded all but small vessels-of-war, and the strong current of the river made the ascent of sailing-vessels exceedingly uncertain and tedious. Now these bars and currents are impediments no longer; and all the armed steamers of Great Britain and France might be formed in array in face of the city of New Orleans, before a rumor of their approach had been heard.

Had the English expedition of 1814, attended by a squadron of large armed steamers, arrived at the mouth of the Mississippi, a few transports might have been taken in tow, and in a few hours the whole army would have been before the city; or twelve or fifteen such steamers could have carried the whole army up in half a day, without the delay of transports. Will it be contended that the attack in that form would have been repulsed with the means then in General Jackson's hands? Would the landing, or even the presence on board these steamships, of the British troops have been necessary to burn the city or put it under contribution? Is there anything now but the existence of forts on the river, to prevent the success of such an attack by fifteen or twenty steamers-of-war, allured thither by the vastly increased magnitude of the spoil?

But there would have been, even then and with those means, one reason with the enemy for avoiding the channel of the river, namely, the existence, seventy miles below New Orleans, of old Fort St. Philip. I will not venture to say that in the then condition of that fort it could have repelled such an expedition, though it did very manfully resist a protracted bombardment; but I do not doubt that the existence of even that feeble work would have had weight in settling the mode and channel of approach, and in turning off the attack into circuitous and tedious avenues, and thereby gaining some time for preparation. I am confident, however, that on the completion of the repairs to that work, now well advanced, and on the completion of the exterior battery of Fort Jackson, (a new fort opposite,) no attack of that nature, even of twice the force, could penetrate by that avenue to the city of New Orleans.

The use of war-steamers against New Orleans may take another phase. If deterred by the forts above mentioned from an attack by the river, an enemy might again take the anchorage off Ship island, and transport his army, either on board steamers of light draught or in boats towed by such steamers, to the foot of Lake Borgne, whence his march to the city (a distance of twenty-eight miles through an unpeopled district) would be over one of the best roads in Louisiana.

There is nothing in the shallowness of Lake Borgne to prevent this, nor are there now any defences on the way, though it is to be hoped that the erection of a tower and battery at Proctor's Landing, which has been strongly urged for some years, and which would effectually close this aperture, will at once be ordered by Congress.

If, as during the war of 1812, it were now necessary to pass the troops from the ships to the shore by means of tow-boats, we might, perhaps, considering the augmented population of the city and environs, trust for sufficient notice and preparation to the time that must elapse before a considerable number could be landed; but with ten or fifteen light-draught war-steamers, fifteen thousand men could be landed and on their march toward the city within twenty-four hours of dropping anchor.

All other avenues to New Orleans from that quarter have, since the war of 1812, been well closed by permanent forts and batteries.

We have another illustration on the Gulf of this action of hostile steamers through shallow channels, and that may be worth adducing. Fort Morgan, at Mobile Point, defends very well the main channel into Mobile bay, and there is no other entrance for sailing vessels-of-war. But the smaller class of war-steamers would find water enough near the end of Dauphin island, and, keeping

out of reach of the guns of Fort Morgan, could pass up into the bay. They could without difficulty ascend as high as the city of Mobile, and reach that place moreover in three hours. A dozen such vessels could in that short time carry up, if they were needed, five thousand soldiers. It is surely not too much to say, therefore, that Mobile, one of our greatest depots of cotton, is by this new inlet for an enemy's cruisers, much exposed. But this is not all the danger. The large fleet of ships, often one hundred in number, and of the largest class of merchantmen, that lie for months awaiting their cargoes in the lower part of the bay, are within an hour's run of such steamers from the open Gulf, and might be destroyed either by the same expedition that ascends to Mobile or by one sent for that particular purpose.

For this and other serious consequences of leaving open this entrance to Mobile bay, the sure and the cheap remedy is the placing of a small fort at the east end of Dauphin island, a work already wisely ordered by Congress. When it is said in general that the light draught of these vessels opens avenues of attack before defended by nature, it must not be supposed that therefore it is part of the system of defence to fortify all shallow channels. Whether shallow passages will require defences or not, will depend entirely on the importance of the objects to which they give access and the power of the attack that may be directed through them, and not all on the circumstance that an enemy's steamers may enter them without difficulty.

There are a great many entrances and harbors on the coast, not shoal harbors merely, but many affording water enough for the largest vessels, that will require, if any, no other defences than such as can be prepared in time of war, because there are no objects upon these waters of a nature to provoke the cupidity of hostile cruisers: having nothing to lose in this way, they will have nothing to fear. The shallow and difficult avenues to great and valuable objects are those for which we have to provide defences in addition to defences that were necessary before the introduction of war-steamers. The danger of the Hell Gate passage to New York sufficed to keep any man-of-war from attempting to sail through, but it proves to be no impediment to steamers. The "Broad Sound" channel and also the "Gut" channel into Boston harbor are easy tracks for large steamers, though next to impracticable to line-of-battle ships and frigates; and so with other channels and other places.

In considering to what extent the introduction of steamers into war service may help the coast defence of the country, should we assume that we ought to rely upon them to repel the enemy's steamers, so dangerous in coming without warning and penetrating promptly through all natural obstacles up to the vital points of the coast, we should commit a very great error, though it is perhaps a natural one on a cursory examination, as it certainly is a frequent one. It would be a fatal error if practiced upon by a nation having more than one or two important ports, and even with such nation it would be the most expensive of all resorts.

This cannot be a safe reliance with war-steamers any more than with sailing vessels-of-war, and a few words may make this clear.

I do not assert that armed vessels would not be useful in coast defence. Such an idea would be absurd. I shall even have occasion to show a necessity for this kind of force in certain exceptional cases. It is the general proposition, viz: that armed vessels and not fortifications are the proper defences for our vulnerable points—a proposition the more dangerous because seemingly in such accordance with the well-tried prowess and heroic achievements of the navy that we have now to controvert.

Boston, New York, Philadelphia, Baltimore, Charleston, and New Orleans are, we will suppose, to be guarded, not by forts, but by those vessels, on the occurrence of a war with a nation possessing large naval means. We know that it is no effort for such nations to despatch a fleet of twenty line-of-battle

ships and frigates, or an equal number of war-steamers, or even the combined mass, both fleets in one.

The United Service Journal shows that in the month of August last Great Britain had actually in commission in their navy, in a time of profound peace, thirty-eight line-of-battle-ships and frigates, thirteen sloops-of-war, and upwards of fifty smaller armed sailing vessels, together with forty-eight armed war-steamers and near forty unarmed steamers.

What, then, shall we do at the above-named ports severally? Each is justly felt to be an object worthy of an enemy's efforts, and each would be culpable in sending elsewhere any part of the force required for its own defence. Each, therefore, maintains a naval force equal at least to that the enemy is judged to be able to send promptly against it. Omitting any provision for other places scarcely less important, what is the result? It is that we maintain within the harbors of, or at the entrance to, these places, chained down to this passive defence, a force at least six times as large as that of the enemy.

He does not hesitate to leave his port, because it will be protected in his absence by its fortifications, which also will afford him a sure refuge on his return. He sails about the ocean depredating upon our commerce with his privateers and small cruisers, putting our small places to ransom, and in other ways following up appropriate duties, all which is accomplished without risk, because our fleet, although of enormous magnitude, must cling to ports which have no other defence than that afforded by their presence. They cannot combine against him nor attack him singly, for they cannot know where he is, and must not, moreover, abandon the objects which they were provided expressly to guard.

It would really seem that there could not be a more impolitic, inefficient, and dangerous system, as there certainly could not be a more expensive one.

A navy, whether of war steamers or sailing vessels, should be aggressive in its action. It should, by carrying the war into the seas and upon the coast of the enemy, direct its calamities from our coast and commerce; but the system we are now considering involves the absurdity of relinquishing all the incalculable advantages of mastery upon the ocean to an enemy who nevertheless may possess but a sixth of our naval power.

To bring other means even in partial substitution for this defence by ships and steamers, or to give it local auxiliary aid, by way of reducing its inordinate magnitude, would be to confess its inappropriateness for harbor defence. We know that other comparatively cheap means may be substituted, but this is just what the proposition denied. Naval means would be *useful* undoubtedly. The question is whether they would be *sufficient*; and we see some of the consequences of making them sufficient. We come thus to examine the defensive arrangements that can be made in aid of or substituted for armed sea-going vessels.

These arrangements may be of two classes, namely: first, fixed forts and batteries on the land, and in some cases movable batteries of heavy guns; and second, upon the water-floating batteries of all kinds, gunboats, etc., fixed or movable.

There are doubtless situations where it may be necessary for us to present a defensive array, at the same time that to do so by fortifications alone would be impracticable; and it is not therefore prejudging the question we are about to examine. It is neither underrating fortifications nor overrating floating defences to say that these last are some or all of them indispensable in such positions.

Any very broad water, where deep soundings may be carried at a distance from the shores, greater than effective gun range, and where no insular spot, natural or artificial, can be found or formed nearer the track of ships, will present such a situation; and we may take some of our great bays as examples.

Broad sounds and wide roadsteads affording secure anchorage beyond good

gun range from the shores will afford examples of another sort, and harbors with very wide entrances and large surface exhibit examples of still another kind.

As in all such cases fortifications alone will be ineffectual, and nevertheless recourse to defences of some sort may be unavoidable, it has not failed to be a recommendation in the several reports on the defence of the coast since 1818, that there should be a suitable and timely provision of appropriate floating defences. And until the invention of man shall have caused an entire revolution in the nature of maritime attack and defence, these or kindred means must be resorted to, not however, because they are means intrinsically good or suitable under like circumstances, but because they are the only means applicable to such cases. In the circumstances just referred to there is no alternative, and therefore no point to be discussed. The remaining question is, whether these floating defences are to be relied on in cases that admit of defence by fortifications.

And first, as to gunboats. Although of undoubted use in peculiar circumstances, it will hardly be contended that gunboats afford a safe reliance in harbors that can be entered by vessels of magnitude. Ships becalmed or aground might be sorely harassed, if not destroyed by a spirited attack from this force, and there are other situations wherein it would be very effective. But harbors defended by gunboats will not be attacked in calms nor in adverse winds, and it is not easy to believe that any probable array of these crafts would impede or hinder for a moment the advance of a hostile fleet. Nelson, at Trafalgar, bore down in two divisions upon the combined fleet, each division being exposed to a raking fire; and although suffering considerably from that fire, he was able, notwithstanding, to break the hostile line and defeat his superior adversary. What, comparatively, with the raking fire of the combined fleet, would be the fire of a fleet of gunboats? Opposing no effectual obstacle to approach or entrance, these small vessels, scattered and driven upon the shoals, could be kept by the broadside of a few active vessels at too great a distance to produce any serious effect upon the main attack by their desultory fire.

Although they might afford useful means of annoyance during a protracted occupation by the enemy of harbors containing extensive shoal grounds, and shallow bays and inlets, they would be nearly useless in resisting the first assault and in preventing the brief operation of levying contributions, or burning or spoiling national establishments.

The true reason of this defence must not, however, be misunderstood. It is not that the boats do not carry guns enough or men enough for the object, but it is because, from the comparative weakness of the vessels, the guns and the men cannot be kept in an effective position.

There are, moreover, many harbors requiring defence, in which there are no shoals whereon the boats could take refuge; and in such their capture or destruction would be inevitable should there be, at the same time, no river up which they might fly, or lateral issue through which they could escape to a safe distance.

Floating batteries, of which a good use might be sometimes made in peculiar situations, would, I suppose, differ from gunboats, in being larger, containing many guns each, and in being stronger; that is to say, having thicker sides or bulwarks; and it has sometimes even been proposed to construct them with ball-proof parapets, and with platforms open above—like, in these respects, batteries upon the shore. But in whatever way formed, it is necessarily a part of the idea that they be strong and massive; and, consequently, that they be unwieldy, incapable of sudden change of place, and incapacitated either to advance upon a defeated foe or to evade a victorious one. We are now, of course, speaking of batteries moved by steam. Being denied the power of locomotion, at least for any purpose of manœuvring in face of the enemy, we are to consider these batteries as moored in position, and awaiting his advance. Should the batteries be large, requiring deep water to float them, or should they be placed

across or near the channel, for the sake of proximity to the track of ships, the enemy would engage them at close quarters. All advantages of mobility—of concentrating his whole fleet upon one or two points, to which, under these circumstances, no relief can be sent—of greater elevation and command, would be on the side of the assailant, with no counteracting advantage to the batteries, but greater thickness of bulwarks. Whether this excess of thickness should be considered a material advantage, since the introduction of large bomb-cannon into the armament of ships, is a very doubtful matter. The batteries if anchored across the channel would have the further advantage of a raking fire; but we have seen that the raking fire of one squadron of ships upon another advancing is by no means decisive. The power of throwing the whole assailing force upon one or two points, of pouring upon the decks of the batteries a greatly superior force of boarders, would, of themselves, seem to leave little room to doubt as to the issue.

If, now, we suppose these floating batteries to be smaller, so that having a lighter draught they might be placed near the shores or upon the shoals, they might certainly be thereby saved from the kind of attack which would prove so fatal if anchored more boldly in deep water; but they would at the same time lose much of their efficiency from their remoteness; and positions wherein they would be secure from being laid alongside, while they would be in a proper attitude to contribute materially to the defence of the harbor, are afforded but rarely. It is doubtful whether, as a general rule, these smaller floating batteries, notwithstanding their greater capacity of endurance, would afford a better defence, gun for gun, than gunboats; or, in other words, whether this capability of endurance in the one would be more than a compensation for the power of locomotion in the other. But whether near the shore or in the channel, whether large or small this description of defence, owing to its fixedness connected with the destructibility of the material of which it must be made, will be exposed to attacks analogous to those made by gunboats on ships aground. The enemy knowing of what the defensive arrangements consist, will come provided with the requisite number of sailing or steam vessels armed with bomb-cannon, against which the thicker bulwarks of the floating batteries would avail nothing. He would, besides, hardly fail to provide himself with bomb-ketches armed with heavy sea mortars; and as there could be no guarding against the effects of the long ranges of these, a few such vessels would, with great certainty, constrain the floating batteries to quit their position, abandoning every disposition approaching to a concentrated array. Not to mention other modes of attack, which would seem to leave the chances of success with the enemy, it will be noticed that this kind of defence, whether by gunboats or floating batteries, has the same intrinsic fault that an inactive defence by the navy proper has; that is to say, the enemy has it in his power to bring to the attack a force of the same nature and at least as efficacious as that relied on for defence; hence the necessity not of mere quality, but of *superiority* on the part of the defence at every point liable to be attacked; and hence also the necessity of having an aggregate force as many times larger than that disposable by the enemy, as we have important places to guard. Should we, for example, have ten such places, and the enemy threaten us with twenty ships of the line, we must have, in all these places, an aggregate of gunboats and floating batteries more than equivalent to two hundred ships-of-the-line; for it will hardly be contended that these defences can be transported from one place to another as they may be respectively in danger.

But what will be the relative state of the parties if, instead of gunboats or floating batteries, we resort to steam batteries.

Although much has been said of late of the great advantage that defence is to derive from this description of force, I have not been able to discover the advantages; nor do I see that sea-coast defence has been benefited in any particular

by the recent improvements in steam vessels, except that in the case before adverted to, where from the breadth of the waters defence from the shore would be unavailing, a more active and formidable floating defence than by gunboats and floating batteries is provided.

It must be remembered that by far the greatest improvement in steam vessels consists in having adapted them to ocean navigation; and one inevitable consequence of this improvement will be, that if the defence of harbors by steam batteries be regarded as securing them from the attacks of ships-of-the-line and frigates, or at least of placing the defence quite above that kind of attack, they will no longer be attacked by sailing vessels, but by steam vessels similar in all warlike properties to those relied on for defence.

Not only is there no impediments to transferring these vessels across the ocean, but the rapidity and certainty of these transfers are such as to enjoin a state of the most perfect readiness everywhere and at all times; and also a complete independence of arrangement at each particular point, both the state of preparation and the independence of arrangement being much more important than when the enemy's motions were governed by the uncertain favor of winds and weather.

It is not easy to conceive of any important properties belonging to steam batteries acting defensively, that the attacking steam vessels may not bring with them, or at least may not have imparted to them on their arrival upon the coast, unless it should be thought proper to give to the former a greater thickness of bulwark than would be admissible in sea-going vessels.

But the peculiar advantage conferred by steam lies in the faculty of moving with promptitude and rapidity, and any attempts to strengthen the harbor vessels by thickening their bulwarks considerably would unavoidably lessen their mobility, thereby partially neutralizing the advantage sought. At the same time it is extremely doubtful whether any benefit would be derived from the thicker sides. It is probable that the best kind of bulwarks for these vessels *and all others*, is that which will be just proof against grape and canister-shot fired from moderate distances, because with such bulwarks a shell fired from a bomb-cannon within a reasonable distance would pierce both sides, that is to say, would go in one side of the ship and out at the opposite side, producing no greater effect than a solid shot of the same calibre, while with thickened sides every shell would lodge in the timbers and produce terrible ravages by bursting.

In the practice with these missiles in this country it has been found difficult to lodge a shell in thin targets, even when the load of the gun was so reduced as to increase materially the uncertainty of aim. As it is probable, therefore, that the protection from solid shot afforded by massive bulwarks would be more than counterbalanced by the greater injury horizontal shells would inflict by means of these bulwarks, we may conclude that the harbor steam battery will not differ in this respect materially from the attacking steam ships; and if they do differ in having more solid and impervious bulwarks, that no advantage over the enemy will result therefrom.

We come therefore to the same result as when considering the application of the other kinds of floating force to the defence of harbors; and this result is, that there is no way of placing the coast in a condition of reasonable security but by having at any point the enemy may happen to select a force in perfect readiness, which shall be superior to that brought to the attack.

There not only prevails the idea that we ought to rely upon these floating defences, but also the idea that we may postpone the fitting them for service till the commencement of war. Turning again to the six ports before mentioned, our whole peace navy that may happen to be in port and ready for use, being appropriated to local defence in its several stations, immense additions would have to be made at each port; and whether these additions were to be supplied from the ship-yards or by conversion of merchant vessels and service steamers

into floating batteries, a considerable time must necessarily elapse before there could be anything like readiness. In the meantime the enemy, sending a small squadron of war steamers against each—nothing being ready large squadrons would not be needed—would nip all preparations in the bud. We have to keep in mind a fundamental principle of this system, which is, not to incur the expense of preparation till the certainty of war has arrived, or, as it might be phrased, till there will no longer be time to prepare.

I should not have gone so much at length into a branch of one subject wherein the general conclusion appears to be so obvious and incontrovertible but for the prevalence of opinions which I consider not erroneous merely but highly dangerous, and which, I think, must give way before a full exhibition of the truth. I do not anticipate any formidable objections to the positions assumed, nor to the illustrations; but even should all these in the form presented be objected to, I may still challenge opposition to the following broad propositions, namely:

1st. If the sea-coast is to be defended by naval means exclusively, the defensive force at each point deemed worthy of protection must be at least equal *in power* to the attacking force.

2d. As from the nature of the case there can be no reason for expecting an attack on one of these points rather than on another, and no time for transferring our state of preparation from one to another after an attack has been declared, each of them must have assigned to it the requisite means; and

3d. Consequently this system demands a power in the defence as many times greater than that in the attack as there are points to be covered.

Believing that a well-digested system of fortification will save the country from the danger attending every form of defence by naval means, and the intolerable expense of a full provision of these means, I will now endeavor to show that such a system is worthy of all reliance.

There has been but one practice among nations as to the defence of ports and harbors, and that has been a resort to fortifications. All the experience that history exhibits is on one side only—it is the opposition of forts or other works comprehended by the term fortification to attacks by vessels; and although history affords some instances wherein this defence has not availed, we see that the resort is still the same. No nation omits covering the exposed points upon her seaboard with fortifications, nor hesitates in confiding in them.

But it has been asserted, in a way to convey incorrect and hurtful impressions to the country, that fortifications for such purposes are obsolete resorts; that the improvements in the instruments and appliances of war within late years have caused the abandonment of such reliances. This, however, is far from being true; and it is quite important in respect to the quarters whence such assertions have sometimes proceeded not only to sustain but to enforce this denial.

If considerable additions have not been made lately to the defences of many well-known European harbors, it is because they were fully fortified long ago. And it might here be asked in passing what would have happened to the sea-ports of France during the long wars between her and Great Britain, and with such naval supremacy in the hands of the latter, if the French ports had not been well fortified? Can it be supposed that anything but these fortifications kept the English out of the great ports and naval depots of France, and permitted large fleets to grow, great expeditions to mature, flotillas to manœuvre, under the eyes of the blockading squadron and almost within reach of its guns?

But it happens that even in well-fortified France any improvement or change in a harbor that affords opportunity and place for new defences is sure to produce them; the Cherbourg breakwater, a work of late years, is supplied with formidable batteries, perhaps even now not quite finished.

It happens, moreover, that in Great Britain, which of all the nations of the

earth has most reason to rely for defence on naval power, fortifications are the reliance for harbor defence, and of late years particularly.

The application of steam to ocean navigation has done much and is likely to do more to lessen the naval ascendancy of that power, and the ports which formerly found security in rather indifferent fortifications under the overwhelming numbers of her men-of-war, have, in the present liability to be surprised by fleets of war-steamers, received and are at this moment receiving large additions of strength in forts and batteries, and new "harbors of refuge" are being formed and strongly fortified, in order the better to protect her coast and her commerce under this change of naval relations.

Great Britain sees that she cannot effectually guard her coast and her ports from this particular danger by the number of her war vessels, great as this number is, and greatly as it may be augmented from her vast commercial marine. She does not run into the folly of posting at every dock yard a squadron of steamers as large as any that can be brought against it, but she improves and adds to her old fortifications to make them adequate of themselves, and she creates new (artificial) harbors for the sake of having fortified shelter near the probable field of activity of her navy in its various forms.

Instead, therefore, of lessening the utility of fortifications, we see that, in the opinion of the high military authorities of that government, the late changes and improvements have made the increase and improvement of fortifications indispensable. There are some particulars of her late course in this respect.

Referring to parliamentary estimates for 1847-'48, 1848-'49, and 1849-'50. I find that for fortification alone, *including new works and repairs of old works* upon the coast of Great Britain and Ireland, (chiefly along the English channel.) and *excluding estimates for barracks, quarters, storehouses, &c.*, there was demanded for those years, severally, \$578,766, \$282,892, and \$439,036, being \$1,300,694 for the last three years.

I find that important colonial ports have received accessions of strength in the same way lately, and that, for example, on the water front of the redoubtable Gibraltar the same batteries that repelled and destroyed the formidable floating batteries of France and Spain in 1782, expenditures exceeding six hundred thousand dollars have been made within four or five years, and \$367,887 more are estimated to be necessary to put them in equilibrium with new means of attack.

At Malta, already possessed of very strong fortifications, about \$180,000 have already been voted, and \$696,000 is called for in addition, to be applied to harbor defences particularly.

The same nation is meanwhile placing in her new coast batteries eight-inch and fifty-six pounders, and thirty-two pound guns; and, at a great expense, is substituting this heaviest kind of ordnance for twenty-four pounders and eighteen pounders in the old batteries. Between the years 1839 and 1849 she has supplied, or has issued orders to supply, to sea-coast fortifications at least two thousand new pieces of the largest calibre. The increase of heavy ordnance in the batteries of Gibraltar within that period, was eighty-two pieces; and at Portsmouth and vicinity it was two hundred and eighty-seven pieces.

Sir Thomas Hastings, of the *Royal Navy*, under examination before a committee of the House of Commons, said: "I was asked just now whether the guns at Portsmouth or other places had been fired in anger. I should be glad to bring under the consideration of the committee that the introduction of steam makes it much more possible now to make attacks upon any certain points. From the different points all along the channel a concentration may be made of a very large body of steamers, and under such circumstances an equipment." (he is speaking of sea-coast batteries,) "which would have answered very well when you had only incidental attacks to contemplate from sailing vessels, might be insufficient when you could bring twenty-five or thirty vessels carrying the

heaviest possible guns to bear upon your works. I will take, for example, if you will permit me, the port of Falmouth. In the event of any war occurring with this country the probability is, being the most western port, it would become the refuge of our merchantmen running into the channel to avoid privateers and steamships. If that port were left in its present state it is clear that ten powerful steamers might destroy everything in it, without any material injury to the assailants."

In answer to the question whether, in his opinion, the merchant steamers would be as available for the defence of the coasts as war steamers, he said: "Certainly not; I think this country (England) would derive an immense power from her merchant marine; but I look upon it to propose to contend with merchant steamers against the *powerful vessels which are in existence in France* would be a very unwise thing."

In April, 1850, the Hon. Colonel Anson, in explaining the ordnance estimate to the House of Commons, said, in reference to the estimates for "*works, buildings, and repairs*": "The whole of this vote had been most carefully considered by the master general of the ordnance and her Majesty's government; and though large in amount, the house would see how small a sum was asked for new works, such as fortifications, &c., either at home or abroad. That reduction was, however, attributable to the large amount that had been spent on those works in previous years. It was needless for him now to point out to how low a state, he might say, indeed, to what a state of degradation our works of defence had fallen till within the last few years, and in what condition the means we possessed of protecting our shores from aggression and insult were in 1835. It was enough to say they were totally inadequate for the purpose. They remained nearly in the same state till 1845, and were in the very lowest possible condition in that year. But, in the meantime, the state of things had not escaped the observation of those who turned their attention to our relations with foreign powers, and many honorable gentlemen found fault with the government for not providing more effectually for the defence of the country. In 1845 the aspect of affairs became threatening; the few fortifications we had to rely upon dismantled, dilapidated, and decayed. If a squadron of steamers had chosen to make their way to any of our principal naval stations, either Portsmouth, Plymouth, or Pembroke, or up the Thames, they were completely open to attack, and an enemy might have committed any act of aggression he pleased. There was nothing to prevent his vessel coming up the Thames and insulting her Majesty in the very heart of her dominions. These considerations pressed themselves so seriously at the time that the attention of the right honorable member for Tamworth and the existing government were called to it, and they at once set to work to remedy the neglect. They proposed that a sum of money should be set apart to improve our defences, and their example had been followed by the present government to a very considerable extent. The result was, that very much had been accomplished during those four years, and he was happy to say the country might be proud of it. At Portsmouth the sea defences had been completed and made very powerful; at Plymouth they were equally complete, and he believed great improvements had taken place at Sheerness, and in the defences on the Thames. They had commenced similar works at Pembroke, which was one of the finest dock yards and harbors in the world, and he was sure the house would be prepared to meet any reasonable demand upon them for its defence. It was impossible to say what might come to pass in a few years, and though the expense might appear to be large now, when the house considered the ultimate advantage to the country from the state and the feeling of security against aggression, they would, he was certain, agree with him that it far out-balanced any temporary inconvenience from the grant of so much money."

An English officer of rank and distinction discussing, in 1849, the system of

defence necessary to Great Britain, after recommending large inland fortifications to be erected against the possible march of an enemy's army upon London, estimates that it will require £1,500,000 (\$6,600,000) to complete existing fortifications *upon the coast*, including new batteries to be constructed there, and to supply them with artillery and stores. That is to say, in his opinion, the sum of \$6,600,000, in addition to what had within these few years been expended, was necessary to be applied to the *coast defences* of that country, in consequence of the changes lately introduced into the means of carrying on war from the ocean.

When I had advanced thus far in this report, and was still seeking facts in illustration of the course pursued by Great Britain, I met the following summary of remarks made in relation to fortifications by Mr. Pitt, sixty-five years ago, (1786.) The principles for which he then contended are now and ever must be as sound and as applicable as when he pressed them on the consideration of parliament with so much earnestness. The only change is one of degree. And we have just seen that the statesmen and military men of that country, at the present day, take the same view and press the same policy. During the wars of the French revolution the vast naval superiority of England enabled her to hold the closest blockade of all the ports of her adversary. This crippled French naval enterprise in a twofold manner—by shutting up the commerce which alone could supply seamen, and by shutting up the few war vessels that they were able to man. But even then, with such little apparent cause to fear anything from that navy, large sums were expended by England upon new sea-coast ports, towers, and batteries. Now, when France can suddenly send out large squadrons of steam war vessels in spite of the strictest blockade, Great Britain feels the need of still greater strength at home. But it is we see always on fortifications that England relies for the safety of her ports; in no case do we see her resorting to a parade of war vessels within or at the entrance to her ports. Where her largest assemblages of men-of-war of all sorts take place, and where there must at all times be a considerable number, there she places, not small batteries and insignificant forts and towers, but her strongest and heaviest fortifications. Her history demonstrates that she knows how to employ her fleets better than keeping them moored within her harbors and roadsteads.

In urging upon the House of Commons, in 1786, certain propositions in relation to fortifications, Mr. Pitt, "to prove the utility of fortifications, appealed to the unfortunate and calamitous situation in which we were placed in the late war. A considerable part of our fleet was confined to our ports in order to protect our dockyards, and thus we were obliged to do what Great Britain had never done before—to carry on a defensive war—a war in which we were under the necessity of wasting our resources and impairing our strength, without any prospect of and possible benefit by which to mitigate our distress. Mr. Pitt felt the question to be a portion of that momentous system which challenged, from its nature, the vigilance and support of every administration."

"Was the House ready to stand responsible to posterity for a repetition of similar misfortunes and disgrace? Were they willing to take upon themselves the hazard of transmitting the dangers and calamities which they themselves so bitterly experienced?" "Mr. Pitt observed that there was a consideration which ought to have more weight than others, and this was, that fortifications, being calculated to afford complete security to dockyards, would enable our fleets to go on remote services, and carry on the operations of war at a distance, without exposing the materials and seed of future navies to destruction by the invasion of an enemy." "But it was not only by foreign expeditions that we might lose the aid of our fleet; in case of invasions it might so happen that the ships, though in the

very channel, might be prevented by contrary winds, tides, and other contingencies, from arriving to the assistance and relief of the dockyards."

"Were it to be asked why the sum to be required by these fortifications had not been demanded for strengthening the navy, he would fairly answer that the money which would prove sufficient to accomplish these works would not build so many ships as would serve for the defence of our most valuable harbors. There was, besides, a certain degree beyond which we could neither build nor man any more. The true limit he could not, nor would it be prudent for him to assign, yet in the nature of things such a limit must exist; but there could never be any line drawn to restrain the security which we ought to provide for our dockyards."

"Mr. Pitt called upon the House to beware how they suffered themselves lightly to be drawn into a line of conduct which might involve their posterity in accumulated evils; and he suggested to their recollection the remorse which they must feel if they should hereafter find that they had, by an ill-timed pertinacity upon the present occasion, brought upon the country calamity and ruin."

I regret that I have not time to find and adduce a few pertinent facts from the practice of the French nation in this respect, and especially within the last few years. We know well, however, the general result, namely, that France has always kept herself well guarded by sea-coast fortifications; and, as before said, that she owes her exemption from many heavy calamities to a steady adherence to that policy.

Believing that the statements just presented must conclusively show that nations having experience in war have made fortifications their main reliance for the defence of their ports, reserving their navies for offensive purposes, and that the greater energy and activity imparted to the latter by modern improvements have compelled a still more powerful preparation of such defences, I turn again to the particular point of our present inquiry, namely, the use and influence of steamers in coast defences. I have to add, that steamers as substitutes for fortifications would be inferior to other armed vessels, because the efficiency of the defence must depend, other things equal, on the number of guns; that is, as a large number will be brought to the attack, a large number must be employed in defence, and steamers carry very few in comparison. The power of rapid locomotion characteristic of steamers, is for this purpose nothing in itself, nor the power of transporting quickly bodies of armed men; there must be the power of heavy and numerous guns, whether moving or anchored. Though very useful in reconnoitering an advancing enemy, in carrying orders, in conveying relief to batteries, in transporting quickly large bodies of men, and in such like duties, steamers could not constitute a good defensive array except against steamers only; and, accordingly, against such an array the enemy's fleet of steamers would bring in tow a few line-of-battle ships or frigates.

Even, therefore, should there be time after a war shall have been opened to prepare in each of the great harbors a hurried display of this kind out of the light river and bay steamers, it would be no match for sea-going steamers and heavy armed vessels brought into the attack; indeed, it would not be easy to say what excess of numbers, in favor of the defence, could establish an equilibrium. As just said above, there could be no resistance of moment made, except by many heavy guns; and to supply these a great multitude of steamers or of merchant ships would have to be converted into floating batteries. What the result of such a resort would be may be learned from the battle of Copenhagen.

This was in no sense a contest between ships and fortifications, as is generally supposed; it was the attack of a fleet of sailing ships upon a line of floating batteries of one kind or another. The Danes had anchored on the edge of a shoal a line of these batteries, parallel nearly with the wall of the city, and at the distance of at least three-fourths of a mile. This line could be attacked

only on the outside, and, when attacked, was interposed between the enemy and the walls, and consequently for the time entirely extinguished the fire from the fortifications.

The line consisted of *block-ships* and *praams*—by which are understood to be meant vessels converted into mere floating batteries and more or less strengthened for the purpose; and *rafts*, supposed to be floats of timber with a timber parapet towards the enemy—in all eighteen batteries. A squadron of four sails of the line, one frigate and two sloops-of-war, were anchored higher up the harbor—where there was also the “three-crown” battery. Lord Nelson carried to the attack twelve line-of-battle ships, twelve frigates, and a number of smaller armed vessels. All this force he concentrated upon the line of floating batteries; every vessel of which was taken or destroyed, except one or two smaller vessels, which cut their moorings and ran in under shelter of the fortification. This concentration included the Danish squadron above mentioned, and also the “three-crown” battery from any material participation in the action. Some English frigates within reach of the latter were greatly injured and obliged to retreat.

This faculty of concentration (applied with success on several memorable occasions by that great naval commander) is an inherent one in an attacking squadron, and is not to be evaded by a line at anchor—especially not by a line of floating batteries.

If, however, we should allow batteries of this sort whether aided by steam or not—to be equal, gun for gun, to the attacking squadron, and that they can be got ready in time, we nevertheless should thereby throw an enormous expenditure of money upon the country at a moment of great fiscal difficulty. Let us make a rough estimate of that expenditure.

Lord Nelson's fleet, just mentioned, was rated at 1,158 guns, and it is only reasonable to assume that we should be liable to a visit from a force as great. Assuming that the merchant vessels taken for conversion into floating batteries, would, on the average, carry ten guns on a broadside, which will be assuming that they are as large as sloops-of-war, we should need fifty-eight such vessels; and estimating these at fifty thousand dollars each, which, including purchase, armament, alteration, &c., is a moderate allowance, we shall have a total first cost of two million nine hundred thousand dollars for one part, and for the six ports before mentioned, a grand total of seventeen million four hundred thousand dollars—a sum much greater than has been expended in preparing for more than four thousand of the heaviest guns in permanent fortifications upon the great points of the coast.

If we attempt to supply the requisite force in guns by the use of river and bay steamers, instead of sailing vessels, we cannot allow more than five guns, in the average, to a broadside; so that we shall require one hundred and sixteen steamers, which, at thirty thousand dollars for purchase, armament and alteration, will give three million four hundred and eighty thousand dollars, for the first cost in a single harbor, and for the six ports, twenty million eight hundred and eighty thousand dollars.

I do not give these estimates as exact, though I believe them to be below the cost that would have to be incurred, but as affording hints of the costliness of provisions of that nature. An expenditure for this purpose, equally great, would have to be repeated, moreover, at the commencement of every war, or still greater outlays would be incurred in keeping up this perishable armament during peace.

What conclusions follow from the preceding considerations? Why, that in adopting this expedient, we should involve ourselves, at the opening of every war, in a vast outlay for the defence of these ports; that there would be great probability that the preparations, although involving that enormous expense, could not be made in time; that, even if prepared in time, everything would be

put at the hazard of a single battle, with most important advantages on the side of the enemy, and consequently few probabilities of successful resistance; or if, by more extended preparations, we should endeavor to turn these probabilities the other way, it would be at the greater risk of not being ready, and with the certainty of greatly enhanced cost.

It has been deemed necessary above all things, considering impressions that have been made on the public mind as to the influence of steam vessels upon sea-coast defence, to show at large that while the introduction of the vessels into naval equipment has greatly facilitated attacks, either by steamers alone or in conjunction with sailing vessels, it has done more to avert or repel them, leaving fortifications, which these vessels can in no case replace but at great disadvantage, more indispensable than ever.

In my desire to convey my own strong convictions, I am conscious that I have tediously prolonged this part of the report.

Although what has been said above is undoubtedly true in reference to steamers or other floating defences as substitutes for fortifications, there remain important functions in defence, which must be committed to floating defences of some kind, as has before been fully set forth; and in some of these cases it is quite certain that steam batteries may, of all floating defences, be the most suitable.

It must not be forgotten, however, that the very qualities which recommend this particular kind of force, will equally characterize the steam vessel of the enemy, and that whether steam vessels or sailing vessels, or both, are relied on, unless there are well-secured points on the shore under which they can take refuge, they will themselves constitute an inviting object to a superior force of the enemy.

If, for example, we were to deem one of our open waters of such importance as to assign eight or ten steam batteries for its protection, we should thereby place within the reach of the enemy an object worthy of the efforts of a squadron of twelve or fifteen vessels of the same description. Even, therefore, instances where these naval means must be resorted to for defence upon the water, there must be works at hand upon the shore, to the shelter of which, if likely to be overpowered, they can retire.

A branch of the second question, namely, that portion which inquires, "In what manner recent improvements in artillery and other military inventions and discoveries affect this question," require some separate remarks.

The only invention and discovery, so far as I am aware, that can affect this question, one way or the other, is that which has introduced the practice of firing shells from guns; and which has involved the use of guns of comparatively large calibre, so that guns which discharge missiles of eight-inch and ten-inch diameter, are rather extensively used, especially eight-inch guns. Even guns of twelve-inch bore have been made in this country, and I believe also in other countries.

It is of course understood that even larger shells than these were long ago thrown in the attack and defence of fortified places, from the mortars of land batteries and bomb ketches. The shells now spoken about, instead of being projected under a high angle, as from mortars, are discharged from guns at low angles, or nearly horizontally, like solid shot; these guns of large calibre being often called Paixhan guns, after the French officer who first succeeded in securing the favor of the military authorities for the idea—the idea having been suggested long before, and even successfully tried.

These shell-guns are now introduced by maritime nations in all vessels-of-war, whether sailing vessels or steamers. Those latter vessels, which carry but few guns in number, are much augmented in power by their introduction, but not more so than sailing vessels, to which these guns are equally appropriate; and I have no doubt that their numbers will be every day increased, until perhaps there will be few or no armed sailing or steaming ships of which the guns will

not be modified in their calibre for this purpose, and provided with shells as well as shot.

As to the injury sustained from an enemy's shells, that will undoubtedly be more serious in steamers than in sailing vessels, because, in addition to all the liabilities to injury that belong, inherently, to vessels of all kinds, there are several superadded by the machinery, the wheels, the boilers, &c., of steamers. In contests between vessels, whether sailing or steam vessels, the effects of shell-guns will no doubt be very destructive on both sides; but between forts and ships, the peculiar injury inflicted by shells will be suffered by the vessel exclusively. The fort will suffer less from hollow shot than from solid shot. This, though true beyond all question or caviling, may need a few words of explanation.

How are the batteries to be affected by them? It can be but in two ways: first, the ship's gun having been pointed so as to strike a vital point—that is to say, a gun or a carriage—the shell may explode at the instant of contact. This explosion may possibly happen thus opportunely, but it would happen against all chances; and if happening, would probably do no more than add a few men to the list of killed and wounded. For reasons that will soon appear, it is to be doubted whether the probability of dismounting the gun would be so great as if the missile were a solid thirty-two pound shot. Secondly, if it be not by dismounting the guns or killing the garrison, the effects anticipated from these missiles must result from the injury they do the battery itself. Now we are perfectly informed by military experience as to the effects of these shells upon forts and batteries; for the shells are not new, although the guns may be so; the eight-inch and the ten-inch shells having always been supplied in abundance to every siege train, and being perfectly understood, both as to their effects and the mode of using them. Were it a thing easily done, the blowing away of the parapets of a work (a very desirable result to the attacking party) would be a common incident in the attacks of fortifications; but the history of attacks by land or water affords no such instance. The only practicable way yet discovered of demolishing a fortification, being by attaching a mine to the foot of the wall; or by dint of solid shot and heavy charges fired intermittingly, during a long succession of hours, upon the same part of the wall, in order not only to break through it, but to break through it in such a manner that the weight and pressure of the incumbent mass may throw large portions of the wall prostrate. This, the shortest and best way of breaking a wall, requires, in the first place, perfect accuracy of direction; because the same number of shots that being distributed over the expanse of a wall would merely peel off the face, would, if concentrated in a single deep cut, cause the wall to fall; and it requires, moreover, great power of penetration in the missile—the charge of a breeching gun being, for that reason, one-third greater than the common service charge. Now the requisite precision of firing for this effect is wholly unattainable in vessels, whether shot be solid or hollow; and if it were attainable, hollow shot would be entirely useless for the purpose, because every one of them would break to pieces against the wall, even when fired with a charge much less than the common service charge. This is no newly discovered fact; it is neither new nor doubtful. Every hollow shot thrown against the wall of a fort or battery, if fired with a velocity affording any penetration, will unquestionably be broken into fragments by the shock.

After so much had been erroneously said about the effect of these shells upon the castle of San Juan d'Ulloa, it was deemed advisable, although the result of European experiments were perfectly well known, to repeat, in our own service, some trials touching this point. A target was therefore constructed, having one-third part of the length formed of granite, one-third of bricks, and the remaining third of freestone. This was fired at by a Paixhan gun, and by a thirty-two pounder, from the distance of half a mile, and the anticipated results were obtained, namely:

1st. Whether it was the granite, the brick, or the freestone that was struck, the solid thirty-two pound shot penetrated much deeper into the wall, and did much more damage than the eight-inch hollow shot; and, 2d. These last broke against the wall in every instance that the charge of the gun was sufficient to give them *any* penetration.

The rupture of the shell may often cause the explosion of the powder it contains, because the shell, the burning fuse, and the powder are all crushed up together; but the shell having no penetration, no greater injury will be done to the wall by the explosion than would be caused by the bursting of a shell that had been placed by the hand against it.

From all this it appears incontrovertible that, as regards the effects to be produced upon batteries by ships, solid shot are decidedly preferable to hollow shot; and the ship that, contemplating the destruction of batteries, should change any of her long twenty-four or thirty-two pound guns for Paixhan guns would certainly weaken her armament. Her best missiles, at ordinary distances, are solid shot; and, if she can get near, grape shot to fire into embrasures and over the walls. The best shells against the batteries are the sea-mortar shells, fired at high elevations; which, being of great weight and falling from a great height, penetrate deeply; and, containing a considerable quantity of powder, cause material ravage by their explosion. Such shells, however, can only be fired by vessels appropriately fitted; namely, by bomb ketches.

The use of these same hollowed shot or shells, by batteries against vessels, is, however, an affair of a different character. The shells do not break against timber; but, penetrating the bulwarks, they, in the first place, would do greater damage than solid shot, by making a large hole and dispersing more splinters; and having, as shot, effected all this injury, they would then augment it many fold by exploding.

In all cases of close action between ship and battery the shells will pass through the nearer side; and, if not arrested by some object on the deck, will probably lodge and explode in the further side, causing by the explosions a much greater loss among the crew, and greater injury to the vessel, than by the mere transit across the vessel; as before suggested, the vessel would suffer less injury were her sides made so thin as not to retain the shell, permitting it to pass through both sides, unless fired with a small velocity. It is not impossible that an extensive use of these horizontal shells may lead to a reduction in the thickness of ship's bulwarks. It is unquestionably true, therefore, that the advantage of this invention or improvement stands, as between forts and vessels, wholly on the side of fortifications; as between sailing vessels and steamers, it is believed to be, as they are now prepared, on the side of sailing vessels; but this last is a point with which we are not now particularly concerned.

Another invention or improvement of modern days was for a time thought to offer important advantages to vessels in contest with forts; not as making the fort more valuable, but the vessel less so. It was the substitution of iron for wood as the material of vessels' hulls. Experience thus far, however, is unfavorable. To make the sides of a thickness to repel shot demands great cost and involves a material loss of buoyancy, and shot passing through the sides of iron vessels are apt not merely to make a hole of about their diameter, as through wood, but to tear whole plates of iron from their rivets. There is good reason to suppose that the use of this material for war vessels has or will be abandoned; if adhered to, to say the least, it will not lessen the advantages possessed by fortification.

The course of the preceding remarks—in discussing the effects upon sea-coast defence, of numerous railroads, and of the use of steamers as war vessels—led to so many incidental observations on the relative influence of fortifications, that the particular point of this influence has already, perhaps, been sufficiently elucidated. Though the relative superiority of fortifications over any other

suggested means has been often enough asserted in these observations, something more must be said as to their *sufficiency* for the security of the great interests on our coast. If willing to trust for their sufficiency to the example of other nations, we should find abundant proof in the practice of all that have taken part in or been exposed to the hazards of war. All have resorted to fortifications, and many have, for long periods of time, owed to them alone exemption from some of the worst of its calamities. The example of other nations at the present moment, as has before been stated, shows, moreover, that they find no other satisfactory reliance under the increased energy now given to the instruments of warfare than an increase of the number and an augmentation of the force of fortifications.

In opposition to this mode of defence much stress is laid on certain successful attacks that have been made by ships on works deemed strong. I have no doubt that all such results might be accounted for by circumstances independent of the naked question of relative strength, but at any rate, when carefully considered, how little do these results prove in comparison with numerous other instances in which there was an immense disparity of force in favor of vessels that have been signally defeated. These latter instances are those that should be received as a test of the actual relation between the two kinds of force; not certainly because they were successful, but because the smaller the works, its armament, its garrison, the less the probability that any extraneous influence has been in operation. A single gun behind a parapet, provided its position be a fair one and the parapet be proof, need, as regards its contest with ships, owe nothing else to the art of fortification; and its effect will be the same whether the battery were fresh from the hands of the ablest engineer of the age or were erected at the dawn of the art. The gun is in a position to be used with effect: the men are as fully protected by the parapet as the service of the gun will allow; they are brave and skillful, and there is nothing to prevent them from doing their duty to the utmost. These are all conditions easily fulfilled, and therefore likely to be so. The state of things is not less just and fair towards the vessel; she chooses her time and opportunity. The battery goes not to the ship, but the ship to the battery, taking the wind, the tide, the sea—all as she would have them; her condition and discipline are perfect, and her crew courageous and adroit. Nothing, under such circumstances, can prevent the just issue of battle but some extraordinary accident, possible indeed to either party, but easily recognized when occurring.

The contest between larger works and heavy squadrons may be much more complicated affairs; the cause of disaster to the former being often traceable to potent, though not always obvious influences. The fortifications may have been absurdly planned originally, or badly executed, for there has at all times been in this profession, as in others, much scope given to quackery; they may have been erected at a time when ships-of-war, against which they were provided, were very different things from the lofty line-of-battle ships of modern times—a long peace or long impunity may have left them in a state wholly unprepared for the sudden use of their strength; the command may have been intrusted to persons ignorant alike of the amount of power in their hands, and of the mode of exercising it; the garrison may have been undisciplined or mutinous; the populace discontented or disloyal; the clamor of frightened citizens may have caused a premature surrender; all these, or any of them may have produced the issue, leaving the question of relative power untouched.

While there can be no doubt that these and other deteriorating influences may have occasionally operated to the prejudice of fortifications, and that these were likely to be more numerous and more controlling as the works were more extensive, it is certain that there can be no influence acting in a reverse direction upon them, that is to say, none making them stronger and more efficient than they ought to be. There can be no favorable influence of such a nature, for example,

as to make the simple one-gun battery, before mentioned, equivalent to a battery (say) ten times as large.

It must not be supposed from what is said in relation to larger fortifications that their magnitude necessarily involves imperfection or weakness, nor because I have considered small and simple works as affording the best solution to the question of relative force must it be inferred that small works are suited to all circumstances. I speak here in reference merely to the judgment we are entitled to form of the relative power of these antagonist forces from their contests as exhibited in history. In instances of the latter sort there cannot, from the nature of the cases, be any important influence operating of which we are ignorant, or for which we cannot make due allowances, while in examples of the former kind we may be in the dark as to many vital matters.

These observations have been deemed necessary because, in judging of this matter, it might not be so obvious that certain brilliant and striking results should not be adopted as affording the true test of relative power. It would be more natural to turn to Copenhagen and Algiers as indicating where the power lies, than to Charleston and Stonington, and yet these latter as indices would be true and the former false.

We will now turn to certain examples.

"The name of Martello tower was adopted in consequence of the good defence made by a small round tower in the Bay of Martello, in Corsica, in the year 1794, which although armed with one heavy gun only, beat off one or two British ships-of-war without sustaining any material injury from their fire. But this circumstance ought merely to have proved the superiority which guns on shore must always in certain situations possess over those of shipping, no matter whether the former are mounted in a tower or not. That this is a just decision will perhaps be readily allowed by all who are acquainted with the following equally remarkable, but less generally known fact, which occurred about twelve years afterward in the same part of the world.

"Sir Sidney Smith, in the *Pompée*, an eighty-gun ship, the *Hydra*, of thirty-eight guns, Captain Manby, and another frigate, anchored about eight hundred yards from a battery of two guns situated on the extremity of Cape Lecosa, and protected from assault by a tower in which were five-and-twenty French soldiers, commanded by a lieutenant.

"The line-of-battle ship and the frigate fired successive broadsides till their ammunition was nearly expended, the battery continually replying with a slow but destructive effect. The *Pompée* (at which ship alone it directed its fire) had forty shot in her hull, her mizzen topmast carried away, a lieutenant, midshipman, and fireman killed, and thirty men wounded. At length, force proving ineffectual, negotiations were resorted to; and, after some hours parley, the officer, a Corsican and relative of Napoleon, capitulated. It then appeared that the carriage of one of the two guns had failed on the second shot, and the gun had subsequently been fired lying on the sill of the embrasure; so that, in fact, the attack of an eighty-gun ship and two frigates had been resisted by a single piece of ordnance."—(*Journal of Sieges*, by Colonel John T. Jones.)

"The Corsican tower above mentioned, which had in like manner completely baffled a naval cannonade, was very soon found to surrender when attacked by land; not, however, before a small battery had been made (erected) to reduce it."—(*Paisley's Course*, vol. iii.)

Here are two examples: 1st. A single heavy gun mounted on a tower beat off one or two British ships; 2d. A barbette battery, containing two guns, beat off a British eighty-gun ship, supported by two frigates.

It would seem that no exception can possibly be taken to either instance as trials of relative power. There is no complication of circumstances on one side or the other; nothing to confuse or mislead; all is perfectly simple and plain. A small body of artillery judiciously posted on the shore is attacked by armed

vessels bearing forty or fifty times as many guns, and the ships, unable to produce any effect of consequence, are beaten off with loss.

The cases present no peculiar advantage on the side of the batteries, either as regards position or quality, for both works were immediately reduced by a land attack—that which the eighty-gun ship and two frigates were unable to effect being immediately accomplished by landing two field-pieces with a very small portion of the crew of one of the vessels. On the other hand, there was no peculiar disadvantage on the part of the ships, as the time and mode of attack were of their own choice.

In order that there might be no unjust disparagement of the vessels in the manner of representing the affairs, the language of British military writers (the ships being British) has been exactly quoted.—(See Paisley's *Course of Elementary Fortifications*, vol. ii, and *Journal of Sieges*, by Colonel John T. Jones.)

Had the representation of these actions been taken from the victorious party, the result, probably, would have appeared still more to the disadvantage of the ships.

The circumstances attending the attack and defence of Copenhagen, in April, 1801, have already been briefly stated. A more minute description will be found in House document No. 206, 1st session, 26th Congress.

I now proceed to examine a great instance of naval success, in which there is no room to doubt the extent to which fortifications were engaged. This instance is the attack on Algiers, in 1816. The attack was made by the combined English and Dutch fleets, mounting about one thousand guns, under the command of Lord Exmouth.

In the fortifications that looked towards the water there are enumerated, in a plan supposed to be authentic, three hundred and twenty guns; but not more than two hundred of these could act upon the fleet as it lay. The ratio of the forces engaged, therefore, as expressed by the number of guns, (saying nothing of the calibres, of which we know nothing,) was about as five to two. The action continued from a quarter before three until nine, without intermission, and did not cease altogether until half past eleven.

It is very certain that the effect of the fire upon the Algerine shipping and town was very severe, because we know that all the shipping was destroyed except some small vessels; and we know, also, that Lord Exmouth dictated the terms of the treaty that followed.

Honorable as this result was to the combined fleets, and happy as it was for the cause of humanity, there are, nevertheless, technical circumstances connected with it that excite doubts as to how much of the final result was due to physical chastisement, to moral effect, to inherent defects in the defences, and to ignorance in the use of these defences, such as they were. That the loss in killed and wounded in the city and works was great is probable, because we are informed that a very great addition had been made to the garrison, in preparation for the attack, under some impression, no doubt, that a landing would be attempted. For the service of the guns there were needed but three or four thousand men at the utmost. An accumulation beyond that number would add nothing to the vigor of defence, while, by causing an increase of the casualties, it would heighten the terrors of the combat. The depressing effect of this loss of life in the batteries and of the burning of buildings within the town and about the mole was, of course, increased by the entire destruction of the Algerine fleet anchored within the mole.

We have no means of judging of the actual condition of the works; nor of their fitness for the task of contending with the heavy ships of modern times.

The forts and batteries on the shore were probably too elevated to be commanded even by the largest of the sailing ships; and, provided these guns were covered with a proof parapet, they may be regarded as being well situated.

But more than half the guns engaged were in the Molehead battery, and the

mode of attack adopted, especially by the Queen Charlotte, of one hundred and ten guns, was calculated to test, in the severest manner, the principles on which this work had been planned. She so placed herself, within "fifty yards" of the extremity of this battery, that she could either rake or take in reverse every part of it. If she at the same time commanded the battery—that is to say, if from her spar-deck she could look down upon its platform—then she must at once, with her grape and canister, have driven the garrison from that platform, leaving only the lower and covered tier of guns, if there were such a tier, for service. With our imperfect knowledge of the fortifications, all this must, however, be left to conjecture.

But there are matters connected with the service of batteries which are not conjecture. Not a shot was fired until the Queen Charlotte had anchored.

What a different vessel, when she anchored, might not this ship have been if the Molehead battery had employed its fire, of more than one hundred guns, in raking her from the time she arrived within a mile and a half until she had anchored within fifty yards! How different might have been the condition of the fleet, generally, if they had been subjected during the approach, and while assuming their stations, to the raking fire of all the two hundred guns!

It does not appear that a single red-hot shot was fired from the batteries.

We might almost rest on this fact, and assert that a defence which had failed to provide itself with this auxiliary means must have been carried on in disregard if not in violation of all rules, all knowledge, and all experience; that it was probably without plan or combination, and not less probably without preparation in other particulars of importance scarcely inferior.

Before leaving this example it may be well to inquire what, after all, was the effect of these batteries upon the ships, compared with the effect of ships upon ships.

In the battle of the Nile the French fleet, rated at one thousand one hundred and ninety guns, caused a loss in Nelson's fleet of eight hundred and ninety-five killed and wounded, which is in the proportion of ten French guns to less than eight Englishmen killed and wounded. In the battle of Trafalgar the French fleet carried not less than three thousand guns, and they caused a loss to the English of one thousand five hundred and eighty-seven killed and wounded, which is in the proportion of ten guns to less than six killed and wounded. In this affair of Algiers, with a force not exceeding two hundred guns, the batteries caused a loss of eight hundred and eighty-three killed and wounded, being in the proportion of ten guns to forty-four men; and if we take into account every gun that was pointed over the bay, (say three hundred and fifty guns,) the proportion will be ten guns to twenty-five men; being an effect more than three times as great as that produced by the French ships at the battle of the Nile, and more than four times as great as that produced by the same nation at Trafalgar.

While reflecting on the circumstances of this battle the mind is not satisfied with any reasons that present themselves for the withdrawal of Lord Exmouth, the moment the land wind enabled him to do so, on the supposition of entire success on his part. It is not understood why he should feel the great anxiety he states himself to have been under that this wind should spring up. "Providence at this interval," (between ten and eleven o'clock at night,) "gave to my anxious wishes the usual land wind common in this bay, and my expectations were completed. We were all hands employed in warping and towing off, and, by the help of the light air, the whole were under sail and came to anchor out of the reach of shells about two in the morning, after twelve hours of incessant labor."

Now if anything had been decided by the action it must have been one of two things: either the ships were victorious or the batteries were so. If the ships were completely victorious it would seem to have been judicious for them to remain where they were, in order, if there was to be any more fighting, to be

ready to press their advantage, and especially in order to maintain the ascendancy, by preventing the remounting of guns, repairing batteries and re-supplying them with munitions, &c.

Had the people possessed the inflexibility report ascribed to the Dey, and had they set zealously about the work of preparation for a new contest, it might not have been easy for Lord Exmouth, in the condition to which his ships are acknowledged by authentic accounts to have been reduced, to enforce his demands. It is not understood, therefore, why, if he had been so successful as to be certain that his end was attained, he should be so anxious to get out of gun-shot, when by so doing he involved the issue in more or less doubt and hazard.

He relied on the effect produced on the people by his dreadful cannonade, and the result proves that he was right; but his anxiety to clear the vessels from the contest shows that there was a power still unconquered, which he thought it best to leave to be restrained by the suffering population of the city than keep in a state of exasperation and activity by his presence. What was this power but an unsubdued energy in the batteries?

The true solution of the question is, then, not so much the amount of injury done on the one side or the other—particularly as there was, on the one side, a city to suffer as well as the batteries—as the relative efficiency of the parties when the battle closed at about eleven o'clock. All political agitation and popular clamor aside, what would have been the result had the fight been continued, or even had Lord Exmouth renewed it next morning?

These are questions that can be answered only on conjecture; but the manner the battle ended certainly leaves room for many doubts whether, had the subsequent demands of Lord Exmouth been rejected, he had it in his power to enforce them by his ships; whether, indeed, if he had renewed the fight, he would not have been signally defeated.

On the whole, this battle, although it stands pre-eminent as an example of naval success over batteries, presents no argument to shake the confidence which fortifications, well situated, well planned, and well fought, deserve as the defences of a seaboard.

Gibraltar.—The attack on the water batteries of Gibraltar, in September, 1782, by the French and Spanish floating batteries, is a well known instance of the power of guns on shore.

These floating batteries had been rendered, as was supposed, shot proof and shell proof, by several additional thicknesses of timber to the sides, and by covering the decks with a roof of sloping timbers.

They mounted one hundred and forty-two guns on the engaged side, with seventy in reserve to replace any that might be dismounted. They were anchored at the distance of about one thousand yards from the walls, and were opposed by about eighty-five guns.

After a protracted cannonade nine of the floating batteries were burnt by hot shot from the shore, and the tenth, having been taken possession of by the victors, was set on fire by them.

No material injury was done to the works of the town by their fire, and only eighty-five men and officers were killed and wounded by the fire from these vessels, together with a very violent cannonade and bombardment from the siege batteries.

Battle of Algeiras.—On the 6th of July, 1801, the French admiral Lenois was lying at anchor off the town of Algeiras with two ships of eighty guns, one of seventy-four guns, and one frigate. To the south of him, on a small island, was a battery, called the Green island battery, mounting seven eighteen and twenty-four pounders; and to the north of him, on the main, another battery, called St. Jacques's battery, mounting five eighteen-pounders. There were, besides, fourteen Spanish gunboats anchored near, making a total of three

hundred and six guns afloat and twelve guns in battery—altogether three hundred and eighteen guns.

Sir James Saumarez hearing that Lenois was in this position, advanced against him from Cadiz with two ships of eighty guns, four of seventy-four guns, one frigate, and a lugger—in all five hundred and two guns. On his approach, Lenois, who was anchored in a line nearly north and south at some distance from the shore, cut his cables, and ran into shoal water to prevent being doubled upon by the British line: this manœuvre at the same time entirely unmasked the fire of the batteries.

The Hannibal, one of the British seventy-fours, in attempting to close with the French admiral, touched the ground and could not be floated off. She, however, continued the fight with great obstinacy, even for a considerable time after she was deserted by her consorts. Not being able to double upon the French line, an attempt was made to assault the Green island battery, which, being badly served by the Spaniards, had nearly ceased firing.

But this attempt was anticipated by the arrival at the island of a party sent from the French frigate lying near; and the assault was defeated with the loss to the English of one boat sunk and another taken—the Frenchmen renewing with vigor the fire of the battery. At the north end of the line the French admiral was aided by seven gunboats, which took so active a part in the fight that five of them were sunk or rendered unserviceable. The St. Jacques battery being, however, served sluggishly by the Spaniards, the French sent a party from the Deseaix to impart greater activity and effect.

After the combat had continued about six hours, the British squadron drew off greatly damaged, leaving the Hannibal seventy-four alone and aground; and she, after suffering great loss, was obliged to strike. The French insist that the Pompee, an English ship of eighty guns, had struck her colors; but as they could not take possession, she drifted off and was towed away: it is believed she was entirely dismantled.

We do not know the loss in the French squadron, but the killed, wounded, and missing in the English fleet amounted to three hundred and seventy-five men; being more than twelve men for every ten guns against them, and being twice as great in proportion as the English loss in the battle of Trafalgar.

In this battle of Algeiras there were five hundred and two English guns afloat acting against three hundred and six French guns afloat. As the English chose their own time for the attack and had the wind, it is only reasonable to suppose that three hundred and six of the English guns were a match for the three hundred and six guns of the French vessels. This will leave one hundred and ninety-six English guns afloat, opposed to the twelve guns in the batteries; or, reckoning one side only of each ship, it shows ninety-eight guns in the British fleet to have been overmatched by the twelve guns in the batteries.

There never was a more signal and complete discomfiture, and it will admit of no other explanation than that just given; namely, that the two small batteries, one of five and the other of seven guns, partly eighteen and partly twenty-four pounders, more than compensated for the difference in favor of the British fleet of one hundred and ninety-six guns.

The Hannibal got aground, it is true; but she continued to use her guns, with the best effect, until she surrendered; and even on the supposition that this ship was useless after she grounded, the British had still an excess of one hundred and twenty-two guns over the French fleet and batteries.

These batteries were well placed, and probably well planned and constructed, but there was nothing extraordinary about them; their condition before the fight was complained of by Admiral Lenois, and they were badly fought in the early part of the action; still the twelve guns on shore were found to be more than equivalent to two seventy-fours and one frigate.

Battle of Fuenterabia.—This recent affair introduces steam batteries to our notice.

On the 11th of July, 1836, six armed steamers, together with two British and several Spanish gunboats, attacked the little town of Fuenterabia. The place is surrounded only by an old wall, and two guns of small calibre, to which, on the evening of the attack, a third gun of larger calibre was added, formed the entire of its artillery. The squadron cannonaded this place during a whole day, and effected absolutely nothing beyond unroofing and demolishing a few poor and paltry houses, not worth, perhaps, the ammunition wasted in the attack. What may have been the number of guns and weight of metal which the assailants brought is unknown; though the superiority, independent of the superior weight of metal, must have been at least ten to one; but not the slightest military result was obtained.—(See United Service Journal, August 1836, p. 531.)

We will now turn to affairs of a similar character on our own coast.

In June, 1776, Sir Peter Parker, commanding a squadron of two ships of fifty guns, four of twenty-eight guns, two of twenty guns, and a bomb ketch—in all (according to their rate) two hundred and fifty-two guns—attacked Fort Moultrie, in Charleston harbor, South Carolina.

It is stated that the fort mounted "about thirty pieces of heavy artillery." Three of the smaller vessels were aground for a time during the action, and one of them could not be floated off, and was in consequence burnt by the English. Deducting this vessel as not contributing to the attack, and supposing the other two were engaged but half the time, the English force may be estimated at two hundred guns; or reckoning one broadside only, at one hundred guns against thirty guns.

The English were defeated with great loss of life and injury to the vessels: while the fort suffered in no material degree, and lost but thirty men. The killed and wounded in the squadron were reported by the commodore to be two hundred and five; being for every ten guns employed against them more than sixty-eight men killed and wounded—a loss more than eleven times as great, in proportion to the opposing force, as the loss at the battle of Trafalgar.

In September, 1814, a squadron of small vessels, consisting of two ships and two brigs, mounting about ninety guns, attacked Fort Boyer, at the mouth of Mobile bay. A false attack was at the same time made by a party of marines, artillery, and Indians, on the land side. The fort was very small, and could not have mounted more than twenty guns on all sides, nor more than fifteen guns on the water fronts. The action continued between two and three hours, when one of the ships, being so injured, as to be unmanageable, drifted ashore under the guns, and was abandoned and burnt by the English; the other vessels retreated, after suffering severely.

There were ten men killed and wounded in the fort; the loss on the other part is not known.

The affair of Stonington, during the last war, affords another instance of successful defence by a battery. In this case there were only two guns (eighteen-pounders) in a battery which was only three feet high, and without embrasures. The battery being manned exclusively by citizen volunteers from the town, repelled a persevering attack of a sloop-of-war, causing serious loss and damage, but suffering none.

In order not to extend this branch of the report further, I beg leave to refer for a detailed account of the attack of the French, in 1838, on the castle of St. Juan d'Ulloa, to the document before referred to.—(House Doc. 206, 1st session, 26th Congress, p. 25.) For the same reason I abstain from introducing several others instances which, though interesting and instructive, would not sensibly affect the argument.

In the fact quoted above there is no illustration of the effect of hot shot, except in the case of Gibraltar. In that attack the floating batteries were

made proof against cold shot, and, as was thought by the constructor, proof against hot shot also; and so, indeed, for a time, it seemed. It was conceived that the hot shot, when buried deep in the closely jointed timbers, would scarcely communicate flame, and that it would not be difficult, by the use of the fire-engines provided, to subdue so stifled a combustion.

By making these floating batteries impenetrable to shot, it was supposed they had been rendered equal in perfectly smooth water to land batteries, gun for gun. And so they might *then* have been, nearly, had the incombustibility of the latter been imparted to them. But now resistance to fire would not suffice; these floating batteries must either repel these horizontal shells from their bulwarks, or if that be impossible, permit them to pass though both sides. Nothing can be better calculated to exhibit the tremendous effect of these shells than a vessel so thick-sided as to stop every shell, allowing it to burst when surrounded by several feet of timber; and there can be no greater mistake than supposing that, by thickening the bulwarks of vessels-of-war, or fitting up steam-batteries with shot-proof sides, the effects of land batteries are to be annulled or in any material degree modified.

This branch of the subject will be summed up with the remark that the facts of history and the practice of all warlike nations are in perfect accordance with the conclusions of theory. The results that reason anticipated have occurred again and again. And so long as on the one side batteries are formed of earth and stone, and on the other, ships are liable to be swallowed up by the element on which they float, or to be deprived of the means by which they move—so long as they can be penetrated by solid shot, set on fire or blown up by hot shot, or torn piecemeal by shells, the same results must inevitably be repeated at each succeeding trial.

But after all, it may be urged that the general principle herein contended for, namely, the superiority of batteries in a contest with ships, might be admitted, and still it would remain to show that batteries constitute the kind of defence best adapted to our peculiar wants. This is true; and I will now proceed to consider, severally, the cases to which defence must be applied. It may be well, however, first to recal the general scope of the preceding argument. It has been contended that floating defences should not be relied on—not because they are actually incompetent to the duty, but because they cannot fulfil this duty unless provided in inordinate numbers, and at a boundless expense; and I have endeavored to show that this remark is generally true, whether the defensive fleet be made up of sea-going vessels, of floating batteries, or of steam batteries. I have next urged the point that properly planned and constructed batteries are an overmatch for vessels-of-war, even when greatly inferior to them in armament—sustaining the opinion by many striking examples, and explaining satisfactorily instances that have cast any doubt on such contests.

If the facts and reasoning presented do not convey the same strong convictions that sway my own mind, it must be because I have obscured rather than illustrated them; for it would seem to be impossible that facts could be more unexceptionable or reasons more beyond the reach of cavil. However that may be, I now leave them to candid and dispassionate revisal, and proceed to examine the mode of applying these defences to our own coasts.

It may be well to divide these into several distinct classes.

1. There will be all the smaller towns upon the coast, constituting a very numerous class.

At the same time that no one of these, of itself, would provoke an enterprise of magnitude, it is still necessary to guard each and all against the lesser attacks. A small vessel might suffice to guard against single vessels that would otherwise be tempted by the facility to burn the shipping and exact a contribution; but something more than this is necessary, since the amount of temptation held out by a number of these towns would be apt to induce operations on a

larger scale. It might often happen, moreover, that our own vessels-of-war would be constrained to take refuge in these harbors, and they should find cover from the pursuer.

Although the harbors of which we now speak afford every variety of form and dimension, there are few, or none, wherein one or two small forts and batteries cannot be so placed as to command all the water that a ship-of-war can lie in, as well as the channel by which she must enter. While the circumstances of no two of them are so nearly alike as not to modify the defences to be applied to them severally, all should fulfil certain common conditions, namely: the passage into the harbors should be strongly commanded; the enemy should find no place after passing wherein he would be safe from shot and shells; and the works should be inaccessible to sudden escalade—that is to say, a small garrison should be able to repel such an assault. With works answering to these conditions, and of degrees of strength in accordance with the value of their respective trusts, this class of harbors may be regarded as secure. I cannot, however, here avoid asking what would be the mode of defence, if purely naval, of these harbors? Suppose the circumstances are deemed to require the presence of a frigate, or a steam-frigate, or an equivalent in gunboats; would not *two* hostile frigates or two steam-frigates infallibly arrive in quest? Could there be devised a system more certain to result in the capture of our vessels and the submission of our towns?

2. Another class will consist of great establishments, such as larger cities, naval depots, &c., situated in harbors not of too great extent to admit of good defence at the entrance, and also at every successive point, so that an enemy could find no spot within in which he could safely prepare for operations ulterior to the mere forcing an entrance.

In this class are to be found objects that are in every sense of the highest value. On the one hand, accumulations of military and naval material, and structure for naval accommodation that could not be replaced during a war, which are of indispensable necessity and of great cost; and on the other hand, the untold wealth of great cities. As these objects must be great in the eyes of the enemy—great for him to gain and for us to lose—corresponding efforts on his part must be looked for and guarded against. If he come at all, it will be in power; and the preparations on our part must be commensurate.

The entrance to the harbor and all the narrow passes within it must be occupied with heavy batteries; and if nature does not afford all the positions deemed requisite, some must, if practicable, be formed artificially. Batteries should succeed each other along the channel, so that the enemy may nowhere find shelter from effective range of shot and shells while within the harbor, even should he succeed in passing the first batteries. Provided the shores admit this disposition, and the defence be supplied with an armament numerous, heavy, and selected with reference to the effects on shipping, the facts quoted from history show that these defences may be relied on.

If the mere passing under sail with a leading wind and tide one or even two sets of batteries, and then carrying on operations out of the reach of these or any other, were all, the enemy might perhaps accomplish it; but the present supposition is, that with this class his ulterior proceedings, and finally his return, are to be subject to the incessant action of the defences.

3. This brings us to consider a third class, consisting of establishments of importance situated at a distance up some river or bay, there being intermediate space too wide to be commanded from the shores. In such cases the defence must be concentrated upon the narrow passes, and must, of course, be appurtenant in armament to the value of the objects covered. When the value is not very great, a stout array of batteries at the best positions would deter an enemy from an attempt to force the passage, since his advantage, in case of success, would not be commensurate with any imminent risk. But with the more valu-

able establishments it might be otherwise. The consequence of success might justify all the risk to be encountered in rapidly passing in face of batteries, however powerful. This condition of things requires peculiar precautions under any system of defence. If, after having occupied the shores in the narrow places in the best manner with batteries, we are of opinion that the temptation may induce the enemy, notwithstanding, to run the gauntlet, the obstruction of the passage must be resorted to. By this is not meant the permanent obstruction of the passage; such a resort, besides the great expense, might entail the ruin of the channel. The obstruction is meant to be the temporary closing by heavy floating masses.

There is no doubt that a double line of rafts, each raft being of large size and anchored with strong chains, would make it impossible to pass without first removing some of the obstructions; and it might clearly be made impossible to effect this removal under the fire of batteries. Such obstructions need not be resorted to until the breaking out of a war, as they could then be speedily formed should the preparation of the enemy be of a threatening nature.

There would be nothing in these obstructions inconsistent with our use of part of the channel, since two or three of the rafts might be kept out of line, ready to move into their places at an hour's notice.

The greatest danger to which these obstructions would be exposed would be from explosive vessels, and from these they might be protected by a boom or a line of smaller rafts in front.

From what has just been said, it will be perceived that when the inducements are such as to bring the enemy forward in great power, and efficient batteries can be established only at a few points, we are not then to rely on them exclusively. In such a case the enemy should be stopped by some physical impediments, and the batteries must be strong enough to prevent his removing these impediments; and also to prevail in a cannonade, should the enemy undertake to silence the works. Not to encumber this report with details in relation to these channel obstructions, I beg leave to refer for them to the same document 206, page 34.

It may be repeated here that such expedients need not be resorted to, except to cover objects of the highest importance and value, such as would induce an enemy to risk a large expedition. For objects of less importance batteries would afford ample protection. It will be remembered that this last power is, when once established in any position, a constant quantity, and although it should be incompetent to effect decisive results when diffused over a large fleet, may be an overmatch for any small force upon which it should be concentrated. At the same time, therefore, that there is the less liability to heavy attack, there will be in the batteries the greater capacity of resistance to others.

It must not be urged, as a reproach to fortifications, that in the case we are considering they are obliged to call in aid from other sources, so long as these aids are cheap, efficient, and of easy resort. By the mode suggested the defence will undoubtedly be complete, every chance of success being on the side of the defence; that is to say, if any confidence is to be placed in the lessons of experience. How, on the other hand, will the same security be attained by naval means? (Only, as before shown, by keeping within the harbor a fleet or squadron, or whatever it may be, which shall be at all times *superior* to the enemy in number of guns.

In a naval defence there will be no advantage in obstructions of any sort, for there can be no lessening of the array of guns in consequence of such obstruction, because if these obstructions are under the fire of the floating defences, the enemy will first subdue that fire and then remove the obstructions at his leisure. If this fire proves too powerful for the enemy, the obstructions will have been unnecessary, and will serve only to shut up our own fleet, preventing the prompt pursuit of a beaten foe.

4. There is a fourth class, consisting of harbors, or rather bays or estuaries, of

such expanse that batteries cannot be made to control the passage. These have been before spoken of. If the occupation of or passage through these must be defended, it must be by other means than batteries upon the shore. The reliance must, from the nature of the case, be a floating defence of magnitude at least equal to the force the enemy may bring. The complete defence of each of these bays would, therefore, involve very great expense—certainly, in most cases, greater than the advantages gained. The Chesapeake bay cannot, for instance, be shut against a fleet by fortifications; and if the entrance of the enemy is to be interdicted, it must be by the presence of a not inferior fleet to his own. Instead of such a system, it will be better to give up the bay to the enemy, confining our defence to the more important harbors and rivers that discharge into the bay.

By this system not only will these harbors be secured, but the defences will react upon the bay itself, and at any rate secure it from predatory incursions, because, as before shown, while Hampton Roads and the navy yard at Norfolk are well protected, no enemy would proceed up the bay with any less force than that which could be sent out from the navy yard. In certain cases of broad waters, wherein an enemy's cruisers might desire to rendezvous in order to prosecute a blockade or as a shelter in tempestuous weather, there may be positions from which sea-mortars can reach the whole anchorage, although nothing could be done with guns. A battery of sea-mortars, well secured from escalade, would in such a case afford a good defence, because no fleet will lie at anchor within the range of shells.

In thus distributing the various exposed points of the sea-coast into general classes, according to the most appropriate modes of defence, we do not find that anything can be substituted for fortifications, where fortifications are applicable, and we find them applicable in all the classes but the last, and in the last we shall find them indispensable as auxiliaries. In this last class there are, no doubt, some cases where naval means must constitute the active and operative force; and it is probable that steam batteries may, of all floating defences, be most suitable, as before stated.

Before proceeding to a specification of the positions on our coast requiring fortifications, something more should be said on the general subject, though on another branch, namely: the proper magnitude and strength to be given to these fortifications.

The present system is founded on this principle, to wit: That the fortifications should be strong in proportion to the value of the objects to be secured. The principle will not, I suppose, be controverted, although the mode of applying it may be.

There will hardly be a difference of opinion as to the mode of guarding the less important points. There being no great attraction to an enemy, works simple in their features, requiring small garrisons only, containing a moderate armament, but at the same time inaccessible to the dashing enterprises that ships can so easily land, and which can be persevered in for a few hours with much vigor, will suffice. Circumstances must, however, materially modify the properties of these works, even when the points to be guarded are of equal value. In one, the disadvantage of position must be compensated by greater power; in another, natural strength may need little aid from art; in another, greater width in the guarded channel may demand a larger armament; and in a fourth, peculiar exposure to land attack may exact more than usual inaccessibility; but all these varieties lie within limits that will probably be conceded.

As to the larger objects, it has been contended that there has been exaggeration in devising works to cover these, the works having been calculated for more formidable attacks than they will be exposed to.

It is easy to utter vague criticisms of this nature, and it is not easy to rebut them without going into an examination as minute as if the criticisms were ever so precise and pertinent.

But let us look a little at the material facts. What is the object of an enemy? What are his means? What should be the nature of our defences?

The object may be to lay a great city under contribution, or to destroy one of our naval depots, or to take possession of one of our great harbors, &c.

It was estimated that in the great fire in the city of New York in the year 1835, the property destroyed within a few hours was worth upward of \$17,000,000, although the fire was confined to a very small part of the city, and did not touch the shipping. Is it easy, then, to estimate the loss that would accrue from the fires that a victorious enemy could kindle upon the circuit of that great city, when no friendly hand could be raised to extinguish them? or is it easy to overrate the tribute such a city would pay for exemption from that calamity? Can we value too highly the pecuniary losses that the destruction of one of the great navy yards would invoke? and the loss beyond all pecuniary value of stores and accommodations indispensable in a state of war, and that a state of war could hardly replace?

But what are the enemy's means? They consist of his whole sea-going force, which he concentrates for the sake of inflicting the blow.

*"From the nature of maritime operations, such a fleet could bring its whole strength to bear upon any particular position, and by threatening or assailing various portions of the coast, either anticipate the tardy movements of troops upon land and effect the object before their concentration, or render it necessary to keep in service a force far superior to that of the enemy, but so divided as to be inferior to it on any one point."**

We have, then, objects of sufficient magnitude, and the means of the enemy consist in the concentration of his whole force upon one of these objects.

With the highest notion of the efficiency of fortifications against shipping, these are not cases where any stint in the defensive means are admissible. Having, therefore, under a full sense of the imminent danger to which the great objects upon the coast are exposed, applied to the approaches by water an array of obstacles worthy of confidence, we must carefully explore all the avenues by land, in order to guard against approaches that might be made on that side in order to evade or to capture the works guarding the channels.

But before deciding on the defences necessary to resist these land attacks, it will be proper to estimate more particularly the means that an enemy may be expected to bring forward, with a view to such land operations.

History furnishes many examples, and the expedition to Flushing, commonly called the Walcheren expedition, may be cited as peculiarly instructive.

From an early day Napoleon had applied himself to the creation of a maritime force in the Scheldt; and in 1809 he had provided extensive dockyards and naval arsenals at Flushing and at Antwerp. On his invasion of Austria that year he had drawn off the masses of his troops that had before kept zealous watch over these naval preparations, relying now on forts and batteries, and on the fortifications of Flushing and Antwerp for the protection of the naval establishments and of a fleet containing several line of battle ships and frigates and a numerous flotilla of smaller vessels.

The great naval establishment at Flushing, near the mouth of the Scheldt, and of Antwerp, some sixty or seventy miles up the river, with the vessels afloat on the river or in progress in the yards, presented an object to England worthy of one of her great efforts.

The troops embarked in this expedition consisted of upwards of thirty-three thousand infantry, three thousand cavalry, more than three thousand artillery, and some hundred of sappers and miners, constituting an army of about forty thousand men.

The naval portion consisted of thirty-five sail of the line, twenty-three frigates, thirty-three sloops-of-war, twenty-eight gun, mortar, and bomb vessels, thirty-six smaller vessels, and eighty-two gunboats, making a total of one hundred and fifty-five ships and other armed vessels, and eighty-two gunboats. The guns, mortars, &c., provided for such bombardments and sieges as the troops might have to conduct, amounted to one hundred and fifty-eight pieces, with suitable supplies of ammunition and stores of every kind.

The idea of sailing right up to their object, in spite of the forts and batteries, seems not to have found favor, notwithstanding the power of the fleet. The plan of operations, therefore, contemplated the landing a portion of the army on the island of Walcheren, to carry on the siege of Flushing, while another portion proceeded up the Scheldt, as high as Fort Bartz, which was to be taken; after which the army would push on by land about twenty miles further and lay siege to Antwerp, all of which it was thought might be accomplished in eighteen or twenty days from the first landing.

The execution did not accord with the design. Flushing, it is true, was reduced within fifteen days; and in less than a week from the debarkation (which was on the 31st of July) Fort Bartz was in possession of the English, having been abandoned by the garrison. But it was twenty-five days before the main body, with all necessary supplies for a siege, were assembled at this point and ready to take up the line of march against Antwerp. Since the first descent of the British matters had, however, greatly changed.

The French were now in force; they had put their remaining defences in good condition; they had spread inundations over the face of the country; and not only would there be little chance of further success, but the safety of the expedition, formidable as it was, might have been compromised by a further advance; it was therefore decided in council to abandon the movement against Antwerp; the troops accordingly returned to the island of Walcheren, which they did not finally leave till the end of December.

The failure in the ultimate object of the expedition is to be ascribed to the omission to seize, in the first instance, the south shore of the river and capture the batteries there, as was originally designed, and which was prevented by the difficulty of landing enough troops at any one debarkation in the bad weather then prevailing. The capture of these batteries would have enabled the expedition to have reached Fort Bartz during the first week; and, in the then unprepared state of the French, the issue of a dash upon Antwerp can hardly be doubted.

The dreadful mortality that assailed the British army is wholly unconnected with the plan, conduct, or issue of the enterprise as a military movement; unless, indeed, it may have frustrated a scheme for occupying the island of Walcheren as a position during the war.

Possession was held of the island for five months; and it was finally abandoned, from no pressure upon it by the French; although, after the first six weeks, the British force consisted, in the aggregate, of less than seventeen thousand men, of which, for the greater part of the time, more than half were sick—effectives being often reduced below five thousand men.

We see, therefore, that an effective force of less than ten thousand men maintained possession of the island in the face of, and in close proximity to, the most formidable military power in Europe, for more than three months. And no reason can be perceived why it might not have remained an indefinite period while possessed of naval superiority.

The proximity of England undoubtedly lessened the expense of the expedition; but it influenced the result in no other way material to the argument.

I will allude to no other instances of large expeditions sent by the English to distant countries than the two expeditions, each of about ten thousand men, sent, in the year 1814, against this country—one by the way of Canada, the

other to the Gulf of Mexico. United, in a single force of twenty thousand men against our sea-coast, the expense would have been less and the result more certain.

The French, notwithstanding their constant naval inferiority, have found opportunities to embark in great undertakings of the same nature. In 1802 Leclerc proceeded to St. Domingo with thirty-four line of battle ships and large frigates, more than twenty small frigates and sloops, and upwards of twenty thousand men. We learn from these points in history what constitutes an object worthy of vast preparations, and it is impossible to resist the fact that our own coast and rivers and bays possess many establishments not less inviting to an enemy than Flushing and Antwerp.

We are taught, moreover, what constitutes a great expedition; in other words, what is the amount of force we must prepare to meet. And, more than all, we are taught that such an expedition, seizing a favorable moment when the military arrangements of a country are incomplete, when the armies are absent or imperfect in their organization or discipline, does not hesitate to land in the face of the most populous districts; and availing of the local peculiarities, and covered and supplied by a fleet, to undertake operations which penetrate into the country and consume considerable time.

It seems, therefore, that whenever the object we are to cover possesses a value likely to provoke the cupidity of an enemy, or to stimulate his desire to inflict a serious blow, it is not enough that the approaches by water are guarded against his ships; it will be indispensable to place safeguards against attacks by land also. A force considerable enough for very vigorous attacks against the land sides of the fortifications may be thrown upon the shore; and, if these yield, a way is opened for the ships, and the enemy carries his object.

In certain positions the local circumstances would favor the land operations of an enemy, permitting him, while operating against the fortifications, to be aided by the fleet and covered from the reaction of the general force of the country. In other positions the extreme thinness of the population in the neighborhood would require the forts to rely for a considerable time solely on their own strength. In all such cases a much greater power of resistance would be requisite than in circumstances of an opposite nature. In all such circumstances the works should be of a strength adequate to resist an attack, although persevered in vigorously for several days. But when these land operations lead away from the shipping, or when the surrounding population is considerable, or when considerable numbers of volunteers or regulars can be speedily drawn in by steamers or railroads, or the enemy is unable to shelter his movements by local peculiarities, then it will suffice if the work can withstand vigorous attacks for a few hours only.

The magnitude and strength of the work will depend, therefore, on the joint influence of the value of the objects covered, the natural strength of the position, and the succor to be drawn from the country. We may introduce, as instances, New York and Pensacola. The former is as attackable as the latter; that is to say, it equally requires artificial defences; and, owing to its capacious harbor and easy entrance, it is not easy to place it in a satisfactory condition as to the approaches by water. But, while an enemy in approaching any of the principal works by land could not well cover himself from the attacks of the concentrated population of the vicinity, the rapid means of communication from the interior would daily bring great accession to the defence. A land attack against the city must consequently be restricted to a day or two, and the works will fulfil their object if impregnable to a *coup de main*.

Pensacola, an object in many respects of the highest importance, and growing in consequence every day, is capable of being defended as perfectly as the city just mentioned. The principal defences lie on a long sandy island which closes in the harbor from the sea. An enemy landed on this island (Santa Rosa) would

be in uninterrupted communication with his fleet, could, owing to the sparseness of its population, have nothing to apprehend for some time from any reinforcements arriving at the place, and would be well protected by position from the effects of this succor when it should arrive.

While in possession of naval superiority, he might, therefore, not unreasonably calculate on being able to press a siege of many days of the work which occupies the extremity of the island and guards the entrance to the harbor. And even before coming into possession of this work, his gun and mortar batteries on the same island could destroy everything not bomb-proof and incombustible at the navy yard.

An attack not less persevering, and with equal chances of success, might be made from the other side of the harbor also.

If, therefore, the power to resist a *coup de main* be all that is conferred on the works at Pensacola, their object will be attained only through the forbearance of the enemy, it being obviously indispensable that the principal of these works be competent to resist a short siege. If this liability resulted from the thinness of the neighboring population, it would still be many years before this state of things would be materially altered.

But it does not depend on this alone: the peculiar topographical features will continue this liability in spite of increasing numbers and ever so easy and rapid communication with the interior, it having been proved that a fleet may lie broad off this shore and hold daily communication therewith during the most tempestuous season. The English fleet of men-of-war and transports lay, during the last war, from February 7 to March 15, 1814, anchored abreast of Dauphin island and Mobile Point, where the exposure is the same as that off Pensacola.

Between the cases cited, which may be regarded as the class of extreme cases, (a class comprising, however, many important positions,) almost every conceivable modification of the defence will be called for to suit the various conditions of the several points.

The fortifications of the coast must therefore be competent to the double task of interdicting the passage of ships and resisting land attacks—two distinct and independent qualities. The first demands merely an array, in suitable numbers and in proper proportions, of heavy guns covered by parapets proof against shot and shells; the second demands inaccessibility. As there is nothing in the first quality necessarily involving the last, it has often happened, either from the little value of the position or from the supposed improbability of a land attack, or from the want of time to construct proper works, that this property of inaccessibility has been neglected.

Whenever we have an object of sufficient value to be covered by a battery, we should bear in mind that the enemy will know the value of the object as well as ourselves; that it is a very easy thing for him to land a party of men for an expedition of an hour or two; and unless we take the necessary preventive measures his party will be sure to take the battery first, after which nothing will prevent his vessels consummating the design it was the purpose of the battery to prevent. In general, the same fortifications that guard the water approaches will protect the avenues by land also; but in certain cases a force may be so landed as to evade the channel defences, reaching the object by a route entirely inland. Of course this danger must be guarded against by suitable works whenever the people cannot come promptly to the rescue.

After the preceding exposition of views on the general subject of the defences of the coast, it may not be out of place here to indicate the mode by which the system of fortifications can be manned and served without an augmentation, for that particular purpose, of the regular army.

The force that should be employed for this service in time of war is the militia, (using the term in a comprehensive sense,) the probability being that, in most of the defended points on the seaboard, the uniformed and volunteer companies

will supply the garrisons needed; and it may be shown that it is a service to which militia are better adapted than to any other. The prominent defect of a militia force results from the impossibility of so training the men to field movements in the brief period of their service, as to give them any confidence in themselves as manœuvrers in the face of regular troops. The little they learn merely suffices to show them that it is but little; every attempt of the kind proving, by the disorders that they know not how to avoid, how much greater would be the disorder if in the face of an enemy and under fire.

Without the knowledge to be obtained only by long and laborious practice, the militiaman feels that he is no match, in the field, for the regular soldier, and it would not be surprising should he desire to avoid an encounter. But there is no such difficulty in the service of fixed batteries; the militiaman has there to be taught merely the service of a single gun, than which nothing can be more simple. He must learn to use the rammer, and the sponge, the handspike, and the linstock; to load and to run to battery, to trail and to fire; these are all. Each of these operations is of the utmost simplicity, depending on individual action and not on concert, and they may all be taught in a very short time. There is no manœuvring, no marching, no wheeling. The squad of one gun may be marched to another, but the service of both is the same. Even the art of pointing cannon is to an American militiaman an art of easy attainment, from the skill that all our countrymen acquire in the use of fire-arms, "drawing sight" or "aiming" being the same art, modified only by the difference in the gun.

The mode of applying this force may be illustrated by the case of any of our cities on the seaboard. The forts and batteries being put in perfect condition, should be garrisoned by a small body of regular artillery, such as a moderate military force could supply, and sufficient for the preservation of the public property, and to afford indispensable daily guards. To these should be added two or three men of the ordnance department, especially charged with the condition of the armament and ammunition, and two or three engineer soldiers, whose sole duty it would be to attend to the condition of the fortifications, keeping every part in a state of perfect repair. In certain important works, however, that would be liable to a violent assault, or exposed to siege, or to analogous operations, it would be necessary, especially on the approach of a war, to keep up a more considerable body of regular troops. The volunteer force of the city should then be divided into detachments, if possible, without disturbing their company organization, and should be assigned to the several works according to the war garrisons required at each—from four to six men, according to circumstances, being allowed to each gun. The larger works might require ten, fifteen, or even twenty companies; the smaller ones, two, three, or more companies; and in some cases even a platoon might suffice. Being thus occupied, each portion of the city force would have its definite alarm post, and should be often taken to it and there exercised in all the duties of its garrison, and more especially in the service of its batteries, and in its defence against assault. The multiplicity of steamboats in all the cities would enable the volunteers to reach even the most distant alarm posts in a short time. In order that all these troops may become expert in their duty, one of the works most convenient to the city, beside being the alarm post of some particular portion of the volunteers, should, during peace, be the ordinary school of drill for all; and in this the detachments should in turns assemble and exercise.

Beside the mere manual of the gun and battery, there should be frequent target practice, as being not only necessary in teaching the proper use of the battery, but as imparting interest and excitement to the service.

It might be necessary for a time to submit the volunteers to the drill of a competent officer or non-commissioned officer of the regular artillery; and in particular, to conduct the practice with shot and shells under such inspection.

The portion of the military force of the city not stationed in the fixed batteries would constitute, under an impending attack, a reserve posted either in one or several bodies, according to circumstances, ready to cover exposed points, to co-operate in offensive movements, or to relieve exhausted garrisons: this portion having connected with it the mounted force, the field artillery and the heavy movable guns.

This appropriation of the volunteer force to the immediate defence of the city, would operate in the most favorable way upon that force; superadding to the impulses of patriotism, every feeling connected with family property and social and civil relations; and while making military service the first of duties, relieving it of hardship and privation.

The organization of volunteer force here contemplated may comprehend the whole maritime frontier, and be applicable, also, at the more populous points upon the inland borders.

This arrangement, while it might be an enduring one, would be the least expensive by far of any that would be efficient.

The days of exercise drill and encampment should be fixed and invariable, in order that they may the less interfere with the private occupations of the volunteers. During an impending attack, greater or less portions should be constantly at their posts; but still the service in the batteries would comprise but a very small portion of the year.

According to the value of the interest to be defended, and the extent of the works to be occupied, would be the rank of the chief command; which should be intrusted to an officer of the regular army, whose control might often be extended, advantageously, over a certain extent of seaboard to the right and left, constituting a maritime department.

The existing fortifications of the sea-coast—including a few useless remains of the revolutionary works, are due to three distinct epochs, namely: 1. Those that grow out of the political agitations attending the French revolution of 1789, and the wars consequent thereon. As all the principal harbors had to be protected at once, the contracted fiscal means of the country required that the works should be small; and they were also generally of a temporary character; but they proved sufficient. France, then a weak naval power, was moreover fully occupied at home, and in pressing her continental campaign.

2. On the approach of the war of 1812, the obvious inadequacy of existing forts led to large appropriations for fortifications, so that when the war broke out there was not a town of any magnitude upon the coast not provided with one or more batteries. Every place within the reach of an enemy's marauding expeditions called for this kind of protection; and there is no doubt that the defences supplied, saved the country from great losses. These defences of the *second system* were also small and weak, and being built for the sake of present economy, of cheap materials and workmanship, were very perishable. The government, aware of this weakness, called out to their support, during the war, vast bodies of militia at enormous expense—covering these troops with extensive lines of field-works.

3. The war with England being over, the government promptly entered upon a *permanent system* of coast defence, and to that end constituted a board of engineers, with instructions to make examinations and plans, subject to the revision of the chief engineer, and the sanction of the Secretary of War. And it is this, the *third system*, that has been ever since 1816 in the course of execution, and is now, as we shall see, well advanced.

Whenever the examinations of the board of engineers included positions for dock yards, naval depots, &c., naval officers of rank and experience were associated with them.

The board devoted several years uninterruptedly to the duty—presenting successive reports, and submitting, first, plans of the fortifications needed at the

most important points. Afterward, they were sufficiently in advance of the execution of the system to apply most of their time to the duties of construction, giving in occasionally additional reports and plans. In rare cases it has happened that plans have been made under the particular direction of the chief engineer, owing to the difficulty, at moments, of drawing the widely dispersed members of the board from their individual trusts.

The board and the chief engineer arranged the defences into classes, according to their view of the relative importance of the proposed works, in the order of time. This order has been generally well observed in the execution of the system, with the exception of some cases in which, by the action of Congress, certain forts were advanced out of the order advised by the board.

For many years grants for fortifications were made, annually, by Congress in a gross sum, which was apportioned according to the discretion of the President. But since March 3, 1821, the appropriations have been specific, the grants for each work being particularly stated. For many years every new fortification has, before being made the object of appropriations, been sanctioned by a special act of Congress upon recommendation of the military committee.

The classes are as follows, giving now merely the names of forts and places: the cost, armament, &c., of the several works executed or projected will be given at the end in proper tables.

Class A includes certain old works of the first and second systems. Some of these are already repaired, some undergoing repairs, and some subject to repair, should a war impend before better works shall have been substituted.

Fort Sullivan	Eastport, Maine.
Edgecomb	Wiscasset, Maine.
Preble	Portland, Maine.
Scammel	Portland, Maine.
McClary	Portsmouth, New Hampshire.
Constitution	Portsmouth, New Hampshire.
—————	Gloucester, Massachusetts.
Pickering	Salem, Massachusetts.
Lee	Salem, Massachusetts.
Sewall	Marblehead, Massachusetts.
Independence	Boston harbor, Massachusetts.
Winthrop	Boston harbor, Massachusetts.
West Head Battery	Governor's Island, Massachusetts.
Southeast Battery	Governor's Island, Massachusetts.
—————	New Bedford, Massachusetts.
Wolcott	Newport, Rhode Island.
Greene	Newport, Rhode Island.
Trumbull	New London, Connecticut.
Hale	New Haven, Connecticut.
Columbus	Governor's Island, New York.
Castle Williams	Governor's Island, New York.
South Battery	Governor's Island, New York.
Gibson	Ellis's Island, New York.
Wood	Bedlow's Island, New York.
Richmond	Staten Island, New York.
Tompkins	Staten Island, New York.
Battery Hudson	Staten Island, New York.
Morton	Staten Island, New York.
Fort Lafayette	Narrows, New York harbor.
Mifflin	Delaware river, Pennsylvania.
McHenry	Baltimore harbor, Maryland.
Madison	Annapolis, Maryland.

Fort Severn	Annapolis, Maryland.
Washington	Potomac river, Maryland.
Johnson	Cape Fear river, North Carolina.
Castle Pinckney	Charleston harbor, South Carolina.
Fort Moultrie	Charleston harbor, South Carolina.
Battery	Beaufort, South Carolina.
Fort Jackson	Savannah river, Georgia.
Marion	St. Augustine, Florida.
Barrancas	Pensacola, Florida.
St. Philip	Mississippi river, Louisiana.

Class B includes new works (third system) completed, or so nearly completed as to be able to use all or nearly all their batteries, viz:

Fort Warren	Boston harbor, Massachusetts.
Adams	Newport, Rhode Island.
Schuyler	Throg's Neck, New York harbor.
Hamilton	New York harbor, New York.
Monroe	Old Point Comfort, Virginia.
Macon	Beaufort, North Carolina.
Caswell	Oak Island, North Carolina.
Pulaski	Cockspur Island, Georgia.
Pickens	Pensacola, Florida.
McRae	Foster's Bank, Florida.
Morgan	Mobile Point, Alabama.
Pike	Rigolets, Louisiana.
Macomb (formerly Wood)	Chef Menteur, Louisiana.
Battery Bienvenue, Bayou Bienvenue, Louisiana.	
Tower Dupré, Bayou Dupré, Louisiana.	
Fort Jackson	Mississippi river, Louisiana.
Livingston	Barrataria bay, Louisiana.

Class C includes works now under construction, and more or less advanced, viz:

Fort Knox	Bucksport, Maine.
Delaware	Delaware river, Delaware.
Carroll	Soller's Point, Maryland.
Calhoun	Hampton roads, Virginia.
Sumter	Charleston harbor, South Carolina.
Clinch	Cumberland sound, Georgia.
Taylor	Key West, Florida.
Jefferson	Garden Key, Tortugas, Florida.
Redoubt of Fort Barrancas	Pensacola, Florida.
Fort Gaines	Dauphin Island, Alabama.

Class D includes works, the first to be commenced, arranged in geographical order, viz:

Fort at mouth of Kennebeck river, and Fort Scammel, (new,) Portland harbor, Maine.

Fort ———, (new,) Portsmouth, New Hampshire.

Fort Pickering, (new,) Salem; Fort ———, (new,) Jack's Point, Marblehead; works at Provincetown, and New Bedford, Massachusetts.

Fort on Rose island, Narraganset roads, Rhode Island.

Fort on Sandy Hook Point, New York.
 Fort on Thomas's Point, Patuxent river, Maryland.
 Fort at Proctor's Landing, Louisiana.
 Works at Galveston bay, and Brazos Santiago, Texas.

Class E includes works to be commenced after those in *Class D*, in geographical order, viz:

New Fort Preble, Portland harbor Maine.
 Works at Gloucester; Closing Broad Sound Pass, Boston harbor; works at Gurnet Point, Plymouth, Massachusetts.
 Works at Cedar Point, Potomac river, Maryland.
 Works at Georgetown, and in Port Royal roads, South Carolina.
 Works on Tybee island, Savannah river, Georgia.
 Tower at Pass au Heron, Alabama.
 Fort at Ship island, Mississippi.
 Works at Passa Cavallo, Matagorda bay, Texas.

Class F includes works to be commenced last of all, also in geographical order, viz:

Works at Eastport harbor, Machias, Mount Desert island, Castine, St. George's bay, Damariscotta bay, Broad bay, Sheepscot bay, Hog Island channel, (Portland harbor,) mouth of Saco river, mouth of Kennebunk river, York, Maine.

Works at Newburyport, Beverly, Nangus Head, (Salem,) Fort Sewall, (Marblehead,) Nantasket head, (Boston harbor,) redoubt on Hog island, (Boston harbor,) Nantucket, Edgartown, Falmouth, Holmes Hole, Tarpaulin Cove, Massachusetts.

Works at Cananicut island, and works closing west passage of Narraganset roads, Rhode Island.

Fort Griswold, (New London,) works at mouth of Connecticut river, Fort Hale and Fort Wooster, (New Haven,) Connecticut.

Works for harbors and towns between New Haven and New York; works in Gardiner's bay, Long Island sound; works in Sag Harbor; fort on Wilkins's Point, Long Island; redoubt in advance of Fort Tompkins, Staten island, New York.

Fort at Delaware breakwater, Lewes; Fort opposite Fort Delaware, Delaware river, Delaware.

Fort on Elk river; works on Hawkin's Point, below Baltimore; fort on Point Patience, Patuxent river; works at St. Mary's, Potomac river, Maryland.

Works at Bald Head and Federal Point, Cape Fear river, North Carolina.

Works at mouth of Santee river, Bull's bay and other inlets, Stono sound, North Edisto sound, South Edisto sound, St. Helena sound, South Carolina.

Works at Wassaw sound, Ossabam sound, St. Catherine's sound, Sapelo sound, Doley inlet, Altamaha sound, St. Simon's sound, St. Andrew's sound, Georgia.

Works at Charlotte harbor, Tampa bay, Appalachicola bay, Appalachie bay, St. Joseph's bay, Santa Rosa bay, Florida.

Works at Perdido bay, Alabama.

Being arranged in the preceding classes, on the principles before stated, it will be seen that those places which are deemed to be least important in the system, and which may be postponed till all others are executed, constitute by far the most numerous class. Within this class (*F*) there are, no doubt, great differences as to the claim for defences, and in the course of years likely to elapse before any of them can be taken in hand, several may rise in the scale of relative importance.

There are also in class *E* differences of the same sort, and it is not unlikely

that before they can be commenced, at the rate the system has heretofore advanced, there may be interchanges between this and class F.

In class D, however, it is less probable that there will be a material change, as all the positions are important now, being designed to cover large towns or cities, or national establishments, or the outlets of valuable commerce or important roadsteads.

I proceed now to examine the coast in detail, proceeding geographically, beginning at the northeastern extremity and referring to accompanying tables. It may be well to observe here, once for all, that much confidence is not asked for the mere conjectures presented below as to the number and cost of the works assigned for the protection of the harbors which have not yet been surveyed. In some cases there may be mistakes as to the number of forts and batteries needed; in others errors will exist in the estimated cost.

Eastport and *Machias* may be mentioned as places that will unquestionably be thought to need defensive works by the time, in the order of relative importance, the execution of them can be undertaken by the government. There are several small towns eastward of Mount Desert island that may, at that period, deserve equal attention; at present, however, the places mentioned will be the only ones estimated for, and \$100,000 will be assumed as the cost of each.

Class F—Mount Desert island, situated a little east of Penobscot bay, having a capacious and close harbor, affording anchorage for the highest class of vessels, and easily accessible from sea, offers a station for the navy of an enemy superior to any other on this part of the coast. From this point his cruisers might act with great effect against the navigation of the eastern coast, especially that of Maine, and his enterprises could be conducted with great rapidity against any points he might select. These considerations, added to the very great advantage, in certain political events, of our occupying a naval station thus advanced, whence we might act offensively, together with the expedience of providing places of succor on a part of the coast where vessels are so frequently perplexed in their navigation by the prevailing fogs, lead to the conclusion that the fortification, in a strong manner, of this roadstead may, before long, be necessary. A survey of this island was begun many years ago, but the party being called off to other duties it was never completed. The project of defensive works has not been made. The entire cost may be, as assumed by the engineer department some years ago, \$500,000.

Class F—Castine.—It would seem to be impossible on this coast to deprive an enemy enjoying naval superiority of harbors, or prevent him using them as stations during a war, insular situations, which his vessels would render unapproachable, being so numerous; but it seems proper that such of these positions as are the sites of towns should be secured. During the last war, the English held the position of Castine for some time, and left it at their pleasure. It is probable a work costing about \$50,000 would deter an enemy from again making choice of this position.

Class F—Penobscot bay.—Upon this bay, and upon the river of the same name flowing into it, are several flourishing towns and villages. Of the many bays which intersect the coast, the Penobscot is the one which presents the greatest number of safe and capacious anchorages. As before observed, a large portion of these harbors must, for the present, be left without defences, but the valuable commerce of the bay and river must be covered; and to afford a secure retreat for such vessels as may be unable to place themselves under the protection of the works to the east or west of the bay, the passage of the river must be defended. The lowest point at which this can be done without great expense, is opposite Bucksport, at the Narrows. *Fort Knox*, at this position, is now under construction, estimated at \$500,000.

Class C—St. George's bay, Broad bay, Damariscotta, and Sheepscot.—West of the Penobscot occur the above-mentioned bays, all being deep indentations leading to towns, villages, and various establishments of industry and enterprise. The bays have not been surveyed, and of course no plans have been formed for their defence. \$400,000 are assigned to the defence of these waters. The Sheepscot is an excellent harbor of refuge for vessels of every size.—(Class F.)

Kennebeck river.—This river (one of the largest in the eastern States) enters the sea nearly midway between Cape Cod and the mouth of the St. Croix. It rises near the source of the Chandiere, which is a tributary of the St. Lawrence, and has once served as a line of operations against Quebec. The situation and extent of this river, the value of its products, and the active commerce of several very flourishing towns upon its banks, together with the excellence of the harbor within its mouth, will not permit its defence to be neglected. The surveys begun many years ago, were never finished. The estimated cost of defences, as formally reported by the engineer department, was \$300,000. Positions near the mouth will permit a secure defence.—(Class D.)

Portland harbor.—The protection of the town, of the merchantmen belonging to it, and of the ships-of-war that may be stationed in this harbor to watch over this part of the coast, or that may enter for shelter, (all of them important objects,) may be secured, as an inspection of the map of the harbor will show, by occupying Fort Preble Point, House island, Hog Island ledges, and Fish Point. If the two channels to the west and east of Hog island can be obstructed at small expense, (to decide which some surveys are yet necessary,) there will be no necessity for a battery on the ledge, and Fish Point need be occupied only by such works as may be thrown up in time of war. The expense, as now estimated, of the works planned for this defence, will be \$155,000 for Fort Preble and \$48,000 for House island; for Hog island chapel, say \$135,000.—(Classes A, D, E, F.)

In addition, there must be repairs immediately applied to the old works at Fort Preble, including the rebuilding of a sea-wall lately overthrown, at an expense of \$7,500.

Saco, Kennebunk, and York.—Small works, comparatively, will cover these places; \$75,000 is assumed as the aggregate cost.

Class F—Portsmouth harbor and navy yard.—The only good roadstead or harbor, between Cape Elizabeth and Cape Ann, is Portsmouth harbor, within the mouth of the Piscataqua river. Line-of-battle ships can ascend as high as Fox Point, seven miles above the town. This situation, sufficiently commodious for a naval depot, should be maintained; but it is to be regretted that the bay to the south of Fox Point was not chosen as the site of the navy yard, instead of Fernald's island. Being where it is, it will be necessary, in time of war, to make some particular dispositions for the protection of the navy yard from an attack from the north shore of the river.

The position of Fort Constitution will certainly, and that of Fort McClary will probably, be occupied as the defence; though the works themselves should give place to those that would better fulfil the object. The other positions for forts or batteries, are Gerrist's Point, Fishing island, and Clarke's island, some, if not all, of which must be occupied. Surveys have been made and projects for the defence are now under the consideration of the board of engineers. The estimates have not been furnished, but there is reason for believing that the entire cost for fortifying this harbor will not fall short of \$300,000.

Class D—Newburyport harbor.—The points forming the mouth of the harbor are continually changing, and it seems necessary, therefore, to rely, for the defence of the harbor, on works to be thrown up during a war. There is only a shoal draught of water. It is thought \$100,000 will defend this harbor adequately.

Class F—Gloucester harbor.—The position of this harbor, near the extremity of Cape Ann, places it in close relation with the navigation of all Massachusetts bay, and imparts to it considerable importance. No surveys have yet been made, but it is believed that sufficient defence may be provided for \$200,000.—(Class E.) Should there be any occasion for defensive works before the proposed new works can be commenced, an expenditure of \$10,000 in repairs of the old fort will be required.—(Class A.)

Beverly harbor.—This harbor will be defended chiefly by a portion of the works designed for Salem. \$50,000 in addition will secure it.—(Class F.)

Salem harbor.—The port of Salem is distant from Marblehead two miles, and separated therefrom by a peninsula. The occupation of the extremity of Winter island (where are the ruins of Fort Pickering) on one side, and Nangashead on the other, will effectually secure this harbor. Projects have been presented for this defence, estimated to cost \$225,000.—(Classes D and F.) On a sudden emergency old Fort Lee may be put in an effective state for \$2,000, and Fort Pickering for \$5,000.—(Class A.)

Marblehead harbor.—Beside covering, in some measure, the harbor, of Boston, Salem and Marblehead possess an important commerce of their own, and also afford shelter for vessels prevented by certain winds from entering Boston or pursuing their course eastward. The proposed mode of defending Marblehead harbor consists in occupying, on the north side, the hillock which commands the present Fort Sewall, (which will be superseded by the new work,) and on the south, the position of Jack's Point. The two works will cost \$318,000.—(Classes D and F.)

To repair old Fort Sewall which may be necessary if the new works are not soon begun, will require ten thousand dollars.—(Class A.)

Boston harbor.—We come, now, to the most important harbor in the eastern section of the coast, and considering the relations to general commerce and the interests of the navy, one of the most important in the whole Union.

After a careful examination of all the necessary conditions of such a problem the board of naval officers and engineers, in their joint report of 1820, gave this harbor a preference over all other positions to the east and inclusive of New York bay and the Hudson as the seat of the great northern naval depot; and the government, by the great additions and improvements that have from year to year been since made to the navy yard on the Charlestown side, have virtually sanctioned the recommendation of the board. But independent of the navy yard, Boston is a city of great wealth, and possesses an extensive and active commerce.

The old works defended merely the interior basin from attacks by water, but as it often happens that vessels enter Nantasket roads with a wind too scant to take them to the city, or are detained in President roads by light winds or an adverse tide, as the former especially is a very convenient anchorage whence to proceed to sea, and above all as Nantasket roads afford the best possible station for a blockading squadron, it was deemed indispensable to place permanent defences at the mouth of the harbor. The project of defence regards the existing works, with the necessary repairs and modifications, as constituting a second barrier.

Beside a permanent work now almost finished on George's island, it contemplates permanent works on Nantasket Head, and filling up the Broad Sound channel, so as to leave no passage in that direction for ships-of-war.

Until the best draught for steam vessels-of-war shall be well ascertained, it will not be safe to say to what depth the Broad Sound channel should be restricted, nor indeed can it be positively asserted that this description of vessels can be conveniently excluded by such means. Other vessels *can*, however, be thus excluded, and steam vessels passing this channel would still have to pass the inner barrier. The estimated cost of the works for this harbor is \$1,354,573

Besides the works of a permanent character, it will be necessary in the beginning of a war to erect several temporary works on certain positions in the harbor and on the lateral approaches to the navy yard.—(Classes A, B, E and F.)

Plymouth and Provincetown harbors.—These harbors have a commerce of some consequence of their own, but they are particularly interesting in reference to the port of Boston. While these are undefended, an enemy's squadron blockading Massachusetts bay will have ports of refuge under his lee, which would enable him to maintain his blockade even throughout the most stormy seasons, knowing that the winds which would force him to seek shelter would be adverse to outward bound and fatal to such inward-bound vessels as should venture near the cape. Were the enemy deprived of these harbors he would be unable to enforce a vigorous investment, as he must be constrained to take an offing on every approach of foul weather. Our own vessels coming in from sea, and finding an enemy interposed between them and Boston, or being turned from their course by adverse winds, would, in case of the defence of these ports, find to the south of Boston shelter equivalent to those provided in the east at Marblehead, Salem, Gloucester and Portsmouth. Plymouth harbor has not been fully surveyed. Provincetown harbor has been surveyed, but the projects of defence have not been formed. The former, it is thought, may be suitably covered by a work of no great cost on Gurnett Point, while to fortify Provincetown harbor in such a way as to cover vessels taking shelter therein, and at the same time to deprive an enemy of safe anchorages, will involve considerable expense. Probably no nearer estimate can be formed at present than that offered by the engineer department some years ago, which gave one hundred thousand dollars to Plymouth and six hundred thousand dollars for Provincetown.—(Classes D and E.)

The coast between Cape Cod and Cape Hatteras differs from the northeastern section in possessing fewer harbors, in having but little rocky and a great portion of sandy shore, in its milder climate and clearer atmosphere; and it differs from all the other portions, in the depth and magnitude of its interior seas and sounds, and in the distance to which deep tide navigation extends up its numerous large rivers. The circuit of the coast, not including the shores of the great bays, measures about six hundred and fifty miles.

Martha's Vineyard sound.—To the south of Cape Cod lie the islands of Nantucket and Martha's Vineyard, which, with several smaller islands on the south, and the projection of Cape Malabar on the east, enclose the above-named sound. The channels through this sound being sufficient for merchant vessels, and one of the channels permitting the passage even of small frigates, are not only the constant track of coasting vessels, but also of large number of vessels arriving in the tempestuous months from foreign voyages. There are within the sound the harbors of *Tarpaulin Cove*, *Holmes Hole*, *Edgartown*, *Falmouth*, *Hyannis*, and *Nantucket*, besides small anchorages.

In addition to the many thousand vessels passing this water annually, of which there are sometimes forty or fifty (a portion containing very valuable cargoes) to be seen in the harbors awaiting a change of wind, there is supposed to be at least forty thousand tons of whaling vessels owned in the towns of this sound.

If the harbors just named are to be defended at all it must be by fortifications. There is little or no population except in the towns, and even this is believed to be entirely without military organization. A privateer might run into either of these harbors and capture, destroy, or levy contributions at pleasure. The use of the sound itself as an anchorage for vessels-of-war cannot be prevented by fortifications alone. Two hundred and fifty thousand dollars may perhaps suffice for the defence of all the harbors against the kind of enterprise to which they are exposed.—(Class F.)

New Bedford and Fairhaven harbor.—Projects and estimates have been

made for the defence of this harbor, on which lie two of the most flourishing towns in the eastern States, New Bedford being, as regards registered tonnage, the third harbor in the United States. Estimate \$208,000.—(Class D.)

Buzzard's bay.—Interposed between the main and the island of Martha's Vineyard are the Elizabeth islands, which bound Buzzard's bay on the south. This bay covers the harbor of New Bedford, and might be used as an anchorage by an enemy's fleet, but it is too wide to be defended by fortifications.

Narraganset bay.—Some of the properties of this great roadstead have been stated in the preceding remarks.

The defence adopted for Narraganset roads must be formidable on the important points, because they will be exposed to powerful expeditions. Although the possession of this harbor, the destruction of the naval establishment, the capture of the floating defences, and the possession of the island as a place of debarkation and refreshment, should not be considered as constituting of themselves objects worthy a great expedition, they might very well be the preliminary steps of such expedition; and defences, weak in their character, might tempt rather than deter it; for although unable to resist his enterprise, they might be fully competent, after being captured and strengthened by such means as he would have at hand, to protect him from offensive demonstrations on our part.

There are besides, in the local circumstances, some reasons why the works should be strong. The channel on the eastern side of the island being permanently closed by a solid bridge, requires no defensive works; but this bridge being the upper end of the island, the channel is open to an enemy all along the eastern shore of the island. Works erected for the defence of the channel of the west side of the island cannot, therefore, prevent nor even oppose a landing on the eastern side. The enemy may, consequently, take possession, and bend his whole force to the reduction of the forts on the island, which cannot be relieved until a force has been organized, brought from a distance, conveyed by water to the points attacked, and landed in the face of his batteries; all this obviously requiring several days, during which the forts should be capable of holding out. To do this against an expedition of ten thousand or twenty thousand men demands something more than the strength to resist a single assault. Unless the main works be competent to withstand a siege of a few days, they will not, therefore, fulfil their trust, and will be worse than useless.

It must here be noticed that, although the works do not prevent the landing of an enemy on Rhode Island, they will, if capable of resisting his efforts for a few days, make his residence on the island for any length of time impossible, since forces in any number may be brought from the main, and landed under cover of the fire of the works.

To come now to the particular defences proposed for this roadstead. It must be stated that there are three entrances into Narraganset roads:

1st. The eastern channel, which passes upon the east side of the island of Rhode Island. This, as before stated, being shut by a solid bridge, needs no defence by fortifications, other than a field-work or two, which may be thrown up at the opening of a war.

2d. The central channel, which enters from sea by passing between Rhode Island and Conanicut island. This is by far the best entrance, and leads to the best anchorage; and this it is proposed to defend by a fort on the east side of the entrance, designed to be the principal work in the system. This work, called Fort Adams, is nearly completed. On the west side of the entrance it is proposed to place another work, and on an island, called Rose island, facing the entrance, a third work. It is also proposed to repair the old fort on Goat island, just within the mouth; and also old Fort Green, which is a little higher up on the island of Rhode Island.

3d. As to the western passage, three modes present themselves: first, by re-

during the depth of water by an artificial ledge, so as, while the passage shall be as free as it is now for the coasting trade, it shall be shut as to the vessels-of-war, including steam vessels; second, by relying on fortifications alone to close the channel; or, third, by resorting in part to one, and in part to the other mode just mentioned. Either is practicable; but, being the least expensive and most certain, the estimates are founded on the first. The total cost of the Narra-ganset defences is estimated at \$1,699,000.—(Classes A, B, D, F.)

Gardiner's bay.—It is uncertain whether this harbor, which would be a very valuable one to an enemy investing this part of the coast, is defensible by fortifications alone. After it shall have been surveyed, it may appear that, from one or more positions, the whole anchorage may be controlled by heavy sea-mortars. In such a case, the defensive works would not be costly. If it be found expedient to fortify some particular portion of the bay, as an anchorage for steam batteries, (which, however, is not anticipated,) the expense would probably be as great as was anticipated some years since by the engineer department, viz: \$400,000.—(Class F.)

Sag Harbor, New York, and Stonington, Connecticut.—Neither of these harbors has been surveyed with reference to defence. The first is possessed of considerable tonnage; and the second, beside being engaged in commerce, is the terminus of a railroad from Boston. \$100,000 may be assigned to the first, and \$200,000 to the other.—(Classes E and F.)

New London harbor is very important to the commerce of Long Island sound; and, as a port of easy access, having a great depth of water, rarely freezing, and being easily defended, it is an excellent station for the navy. It is also valuable as a shelter for vessels bound out or home, and desirous of avoiding a blockading squadron off Sandy Hook. The plan of defence includes the rebuilding of Forts Trumbull and Griswold—the former having been already done, very nearly—remaining expense estimated at \$198,000.—(Classes A and F.)

Mouth of Connecticut river.—This river has been shown to be subject to the expeditions of an enemy. No survey has been made with a view to its defences. \$100,000 is introduced here as the conjectural cost.—(Class F.)

New Haven harbor.—It is proposed to defend this harbor by improving and enlarging *Fort Hale*, and substituting a new work for the slight redoubt erected during the last war, called *Fort Wooster*. The expense of both may be set down at \$90,000, exclusive of \$5,000 for immediate repairs of old *Fort Hale*.—(Classes A and F.)

There are several towns between *New Haven* and *New York*, on both sides of the sound; none of them are very large as yet; still, most, if not all, are prosperous and increasing. Although in their present condition it might not be deemed necessary to apply any money to permanent defences, yet, as part of the present object is to ascertain, as near as may be, the ultimate cost of completely fortifying the coast, it seems proper to look forward to the time when some of these towns may become objects of predatory enterprises of some magnitude. Bearing in mind the probable increase of population in the meantime, and the situation of the places generally, it is thought that \$200,000 will be enough to provide defences for all.—(Class F.)

New York harbor.—The objects of the projected works for the security of New York are to cover the city from an attack by land or sea; to protect its numerous shipping; to prevent, as far as possible, the blockade of this great port, and to cover the interior communication uniting this harbor with the Delaware.

There are two avenues to the city, namely, one by the main channel, direct from sea, and one by the sound.

The projected system of defence closes this last avenue at the greatest distance possible from the city, namely, at Throg's Point. The occupation of this point

will force the enemy to land more than twenty miles from the city on one side, and still further from the navy yard on the other.

A work now in progress and nearly finished at Throg's Point will prevent any attempt to force this passage. It will, as we have seen, oblige an enemy to land at a considerable distance from the object; and, as he will then be unable to turn the strong position afforded by Harlem river, the cover on the New York side will be sufficient.

But should he land on the Long Island side, he might, by leaving parties on suitable positions, with a view to prevent our crossing the river and falling on his rear, make a dash at the navy yard, having no obstacle in his front. To prevent this effectually, and also to accomplish other objects, a work should be erected on Wilkins's Point, opposite Throg's Point. This work, besides completing the defence of that channel, would involve a march against the navy yard from this quarter in great danger, since all the forces that could be collected on the New York shore might, under cover of this work, be crossed over to Long Island, and fall on the rear of the enemy, cutting off his communication with the fleet. The two works on Throg's and Wilkins's Points may therefore be regarded as perfectly protecting on that side the city and navy yard.

Against an attack by the main channel there are—

1st. The works in the vicinity of the city, which would act upon an enemy's squadron only after its arrival before the place. They consist of Fort Columbus, Castle Williams, and South Battery, on Governor's Island, Fort Wood, on Bedlow's island, and Fort Gibson, on Ellis's island.

It is necessary that these works be maintained, because, in the event of the lower barriers being forced, these would still afford a resource. It is a disadvantage of their positions, however, that the destruction of the city might be going on simultaneously with the contest between the forts and the fleets. They cannot, however, be dispensed with until the outer barriers are entirely completed, if even then.

2d. At the Narrows, about seven miles below the city, the passage becomes so contracted as to permit good disposition to be made for defence. On the Long Island side of the Narrows is *Fort Lafayette*, which is a strong water battery, standing on a reef at some distance from the shore, and immediately behind it, on the top of the bank, is a small but strong work, called *Fort Hamilton*. Some repairs being applied to these works, this position may be regarded as well occupied.

On the west or Staten Island side of the Narrows are the following works, all of which were erected by the State of New York, viz: *Fort Richmond*, which is a water battery; *Battery Hudson*, which is at some height above the water; *Battery Morton*, which is a small battery on the top of the hill, and *Fort Tompkins*, which is also on the hill, and is the principal work. All these works, as well as the site common to them all, are now the property of the United States, by purchase from the State of New York.

Batteries Hudson and Morton have been put in perfect order, and afford a formidable array of guns. *Fort Richmond*, which occupied the best position within the whole harbor for channel defence, had fallen entirely to ruin; it is now being reconstructed, and with the appropriation asked for in the estimates of last year might have been now ready for one tier of guns.

The nature and extent of repairs required by *Fort Tompkins* have not yet been settled, this not being deemed so pressing as a state of readiness in the batteries just mentioned. Besides these works, there has been projected for Staten Island an advanced *redoubt*, which, however, falls within the class of works (F) last to be erected.

With the Narrows thus defended, and the works near the city in perfect order, New York might be regarded as pretty well protected against an attack by water through this passage.

But there lies below the Narrows a capacious bay, affording good anchorage for any number of vessels-of-war and transports. An enemy's squadron being in that bay, into which entrance is very easy, would set a seal upon this outlet of the harbor. Not a vessel could enter or depart at any season of the year. And it would also intercept the water communication, by way of the Raritan, between New York and Philadelphia.

The same squadron could land a force on the beach of Gravesend bay, (the place of the landing of the British, which brought on the battle of Long Island in the revolutionary war,) within seven miles of the city of Brooklyn, of its commanding height, and of the navy yard, with no intervening obstacle of any sort.

This danger is imminent, and it would not fail, in the event of war, to be as fully realized as it was during the last war, when, on the rumor of an expedition being in preparation in England, twenty-seven thousand militia were assembled to cover the city from an attack of this sort. It is apparent that the defences near the city and those at the Narrows, indispensable as they are for other purposes, cannot be made to prevent this enterprise, which can be thoroughly guarded against only by

3d. An outer barrier at the very mouth of the harbor. This would accomplish two objects of great consequence, namely, rendering a close blockade of the harbor impossible, and obliging an enemy who should design to move troops against the navy yard to land at a distance of more than twenty miles from his object, upon a dangerous beach, leaving, during the absence of the troops, the transports at anchor in the ocean, and entirely without shelter.

The hazard of such a land expedition would moreover be greatly enhanced by the fact that our own troops, by passing over Long Island under cover of the fort at Wilkins's Point, could cut off the return of the enemy to his fleet, which must lie at or somewhere near Rockaway. Time, distance, and the direction of the respective marches would make, very naturally, such a manœuvre a part of the plan of defence. Against an enemy landing in Gravesend bay no such manœuvre could be effectual, on account of the shortness of his line of march, as well as of its direction.

In view of these considerations, the board of engineers projected additional works, one for the *east bank*, and another for the *middle ground*, these positions being on shoals on either hand of the bar outside of Sandy Hook. Before determining on the works last mentioned the board went into much research, in order to ascertain whether these shoals were unchangeable, and it was thought to have been fully proved that there had been no material alteration in more than sixty years. This apparent stability of the shoals encourage the board to devise the project referred to.

More recent surveys have, however, discovered new, or rather other channels. If they, indeed, be *new* channels, they show a want of stability in the shoals that forbids any such structures as the batteries formerly contemplated. And whether new or not they would deprive these batteries of a material portion of their efficacy. Removing, then, these defences from this outer bar, they must occupy the position of *Sandy Hook*; at which they will afford a very good defence of the main channel, and prevent the entrance to or occupation of the lower bay for any hostile purpose whatsoever, and cover a secure anchorage there for our own merchantmen and privateers, and for our steam and sailing cruisers.

To recapitulate as to New York harbor. The security of the city of New York, Brooklyn, &c., and the navy yard requires, first, defences on the passage from the sound; namely, the completion of *Fort Schuyler* on Throg's Point, (Class B,) and the erection of a fort on Wilkins' Point (Class F)—cost of both \$711,000; second, completion of repairs on works of Governor's island, Bedlow's island, and Ellis's island—estimated cost \$42,689, (Class A;) third, repairs

of the works at the Narrows, including those formerly belonging to the State of New York—cost \$326,834, (Class A and B;) and fourth, the erection of outer defences on Sandy Hook—estimated by the board of engineers to cost \$1,200,000, (Class D;) the total cost will therefore be \$2,332,523.—(Classes A, B, D, F.)

Delaware bay, Fort Delaware, Fort Mifflin, Delaware Breakwater.—The coast from the mouth of the Hudson to the Chesapeake, as well as that on the south side of Long island, is low and sandy, and is penetrated by several inlets; but not one, besides the Delaware, is navigable by sea-going vessels. The Delaware bay itself being wide and full of shoals, having an intricate channel, and being much obstructed by ice in the winter, affords no very good natural harbor within a reasonable distance of the sea.

The artificial harbor constructed just within the mouth of Delaware bay supplies this need, and must be securely fortified. No plans have, however, as yet been made with that object; and as to the probable cost, nothing better can now be done than to assume the conjectural estimate made some years since in the engineer department, namely, \$600,000.—(Class F.)

The lowest point at which the bay is defensible is at Pea Patch island, about forty-five miles below the city of Philadelphia. A fort on that island, to replace the one destroyed by fire; a fort opposite the Pea Patch, on the Delaware shore, to assist in commanding the Delaware channel, and at the same time to protect the mouth of the Delaware and Chesapeake canal; a temporary work on the Jersey shore, to be thrown up at the commencement of a war, to assist in closing the channel on that side; together with floating obstructions, to be put down in moments of peril, will effectually cover all above this position—including Philadelphia and its navy yard, Wilmington, New Castle, the canal before mentioned, and the Philadelphia and Baltimore railroad.

The rebuilding of *Fort Delaware* was long delayed by difficulties attending the settlement of claims to the island (Pea Patch) on which it is to stand; these having been adjusted, the fort is in progress—the tedious and difficult process of forming a foundation with piles and grillage being concluded. In the meantime, *Fort Mifflin*, an old work, standing about seven miles below the city of Philadelphia had been put in good order.

The expense of *Fort Delaware* is, according to revised estimates, \$580,000, and of the fort opposite, \$521,000.—(Classes C and F.)

Chesapeake bay, Hampton roads, James river, Norfolk, and the navy yard.—The works projected for these are: first, a fort at Old Point Comfort—this is called *Fort Monroe*; second, a casemated battery called *Fort Calhoun*, in the Rip Rap shoals, opposite Old Point Comfort; and, third, a line of floating obstructions, extending across the channel from one of these works to the other.

Fort Monroe is of itself complete, but an advanced redoubt on the land side is unfinished, and considerable work is yet necessary to secure proper ventilation and the necessary dryness to the great powder magazines within the fort. designed as a principal depot of that material. Attempts to secure good water by an artesian well are still persevered in. Required to complete, \$75,000.—(Class B.)

Fort Calhoun cannot yet be carried forward for want of stability in the foundation. The artificial mass on which it is to stand having been raised out of the water, the walls of the battery were begun some years since; but it was soon found that their weight caused considerable subsidence. On an inspection by engineer officers it was then decided to keep the foundation loaded with more than the whole weight of the finished work until all subsidence had ceased. The load had hardly been put on, however, before it was injudiciously determined to take it off, and begin to build, although the settling was still going on. Happily, a better policy prevailed before the construction was resumed, but not before the very considerable expense of removing the load had been incurred, and the further expense of replacing it rendered necessary. The subsidence

has now so nearly ceased that it is contemplated to resume the construction at an early day.—(Class C.) Required to complete, \$729,332.

It may be expedient in time of war, by way of providing interior barriers, to erect batteries on Craney island, at the mouth of Elizabeth river, and to put in condition and arm Old Fort Norfolk, which is just below the city.

Harbor of St. Mary.—The central situation (as regards the Chesapeake) of this fine basin, its relation to the Potomac, its depth of water, and the facility with which it may be defended, indicate its fitness as a harbor of refuge for the commerce of the Chesapeake bay, and as an occasional, if not constant, station during war of a portion of the naval force. A survey has been made, but no project has been formed. The Engineer Department some years ago conjectured that the cost of defences in this harbor might amount to \$300,000.—(Class F.)

Annapolis harbor.—*Fort Severn* has been put in an efficient condition, and repairs have been advanced on *Fort Madison*; these will be continued until that work also shall afford an efficient battery.—(Class A.) Estimated at \$30,000.

Harbor of Baltimore.—The proximity of the city to Chesapeake bay greatly endangers the city of Baltimore. In the present state of things an enemy, in a few hours march, after an easy landing, and without having his communication with his fleet endangered, can make himself master of that great emporium of commerce. There are required for its security two forts on the Patapsco, one at Hawkin's Point, and the other opposite that point; these being the lowest positions at which the passage of the Patapsco can be defended. Besides the advantages that will result of obliging the enemy to land at a greater distance, thereby gaining time by delaying his march, for the arrival of succor, and preventing his turning the defensive positions which our troops might occupy, it will be impossible for him to endanger the city by a direct attack by water.

The operations on *Fort Carroll*—the work occupying the extremity of Soller's flats, (opposite Hawkin's Point,)—are proceeding with all the rapidity allowed by the appropriations. Estimate, \$865,000.—(Class C.)

The work on Hawkin's Point belongs to class F, and is estimated to cost \$376,000.

The present *Fort McHenry*, *Redoubt Wood*, and *Covington Battery* should be retained as a second barrier. The first-mentioned is now in good condition, and the repairs required for the others may be applied at the beginning of a war.

Mouth of Elk river.—The completion of the line of water communication from the Delaware to the waters of the Chesapeake makes it proper to place a fort somewhere near the mouth of Elk river, in order to prevent an enemy from destroying, by a sudden enterprise, the works forming this outlet of the canal. There have been no surveys made with a view to establish such protection, which is estimated at \$50,000.—(Class F.)

Cities of Washington, Georgetown, and Alexandria.—*Fort Washington* covers these cities from any attack by water, and will oblige an enemy to land at some eight or ten miles below Alexandria, should that city be his object, and about twice as far below Washington. It will also serve the very important purpose of covering troops crossing from Virginia, with a view to fall on the flanks of an enemy moving against the Capitol from the Patuxent or the Chesapeake. The repairs on this work have been completed.—(Class A.)

Cedar Point, Potomac river.—But all these objects would have been better fulfilled had the work been placed at Lower Cedar Point. As it is, however, the contemplated works being constructed in the Patuxent, and the militia of the surrounding country in a due state of preparation, an enterprise against Washington would be a hazardous one. As giving complete security to the towns in the district, covering more than sixty miles in length of the Potomac; the river terminus of the great railroad from the south, and a large tract of country lying between the Potomac and the Patuxent; the work on Cedar Point should not

be omitted. There have been no surveys made of the ground, nor projects of the fort, which, in a conjectural estimate of the engineer department, was set down at \$300,000.—(Class E)

Patuxent river.—The more effectually to protect the city of Washington from a sudden attack by troops landed at the head of navigation in the Patuxent, and to provide additional shelter for vessels in the Chesapeake, a fort has been planned to occupy Point Patience and another to occupy Thomas's Point, both a short distance up the river. The work on *Thomas's Point* is estimated at \$259,000, and the work on *Point Patience* estimated to cost \$246,000.—(Classes D and F.)

It will be perceived that the system of defence for Washington contemplates, first, defending the Potomac on Cedar Point, and maintaining a second barrier at Fort Washington; second, defending the mouth of the Patuxent. This particular arrangement not having been always understood, a few words are added in explanation.

During the last war there was no fort in the Patuxent, and the consequence was that the British approached by that avenue and occupied the whole river as high as Pig Point, nearly fifty miles from its mouth, and less than twenty miles from the Capitol; while, in consequence of there being no forts in the Potomac, they occupied that river as high as Alexandria, inclusive; by this latter occupation perfectly protecting the left flank of the movement during its whole advance and retreat. Both flanks being safe, the British had nothing to fear except from a force in front; and that this risk was not great, in the short march of less than twenty miles from the boats, was proved by the issue.

On the ninth day from that on which the fleet entered the Chesapeake the English army was in possession of the Capitol, having penetrated nearly fifty miles beyond the point of debarkation. On the twelfth day from the time of landing, the troops were again on shipboard, near the mouth of the river. This attack, exceedingly well conceived and very gallantly executed, owed its success entirely to the want of defences, such as are now proposed.

Let us suppose both rivers fortified as recommended, and an enemy landed at the mouth of the Patuxent. If now he attempt this enterprise, his march would be prolonged by at least four days—that is to say, it will require more than sixteen days, during which time he will be out of communication with his fleet as regards supplies and assistance.

The opposition to his invasion will begin at the landing, because our troops having now nothing to fear as to their flanks, either from the Potomac or Patuxent, will dispute every foot of territory; and although he should continue to advance it must be at a slower rate. While he is thus pursuing his route toward Washington, the forces of Virginia, brought by railroad to the mouth of Aquia creek, will be crossing the Potomac and concentrating at Port Tobacco, or some position between that place and Fort Washington, preparatory to falling on his flank and rear. This would seem to be conclusive, for it is difficult to conceive of troops persevering in an expedition when every moment will not only place them further from succor but greatly increase their need of it. Railroads reach from near the crossing places of the Potomac to the very heart of the country south, and a very few days would bring forward a large force, all of which would arrive upon the rear of the enemy.

It has been said that if shut out of the Patuxent the enemy might land between the mouth of that river and Annapolis, and thence proceed against Washington. But the same difficulties belong to this project, and a new difficulty is added. The Virginia forces arrive as before, and assail his flank, either between the Potomac and Patuxent or between the Patuxent and the Chesapeake; and there is, besides, the Patuxent for the enemy to cross, both in going and returning—itself a formidable military obstacle.

It is said, also, that the landing may be made in the Potomac; but this only

proves that the system animadverted on had not been studied, it being a fundamental principle of the system that such landing must be prevented by fortifying the river as low down as possible.

The southern coast, stretching from Cape Hatteras to the southern point of Florida, is invariably low, and for the greater part sandy, much resembling the coast from the above-mentioned cape to Montauk Point, on the east end of Long Island. A ridge of sand, here and there interrupted by the alluvion of the rivers, extends through its whole length. This ridge, in certain portions, lies on the main land; while in others it is divided therefrom by basins or "sounds" of various width and depth, and is cut up into islands by numerous channels, which connect these interior waters with the sea. Wherever this sand ridge is interrupted, its place is occupied by low and marshy grounds, bordering the principal and the many lesser outlets of the rivers.

Ocracoke inlet, N. C.—The shallowness of the water on the bars at this inlet effectually excludes all vessels-of-war—at least, all moved by sails. But as this is an outlet of an extensive commerce, and as, through this opening, attempts might be made in small vessels, barges, or the smaller class of steam vessels, to destroy this commerce, or to interrupt the line of interior water communication, timely preparation must be made of temporary works, equal to defence against all such minor enterprises.

Beaufort harbor, N. C.—A work called *Fort Macon* has been erected for the defence of this harbor. It is in a very efficient condition, though some slight additional work is needed, both for the fort itself and for the preservation of the site, which is acted upon violently by the sea. Successful impediments to this action have been resorted to, which require a little extension, however, and continual care. Estimate, \$3,000.—(Class B.)

Mouths of Cape Fear river, N. C.—The defence of the main channel of Cape Fear requires, in addition to *Fort Caswell*, (now completed,) on Oak island, another fort on Bald Head. And the defence of the smaller channel will require a redoubt on Federal Point. The battery, magazine, block-house, &c., at Smithville, should remain as accessories. *Fort Caswell*, Oak island, \$7,000.—(Class B.) *The fort on Bald Head* (class F) will require \$180,000. *The redoubt on Federal Point* (class F) will require \$18,000; and the battery, &c., called *Fort Johnston*, at Smithville, (class A.) \$5,000.

Georgetown harbor, S. C.—The first inlet of any consequence south of Cape Fear river is at the united mouths of the Waccamaw, Pedee, and Black rivers, forming Georgetown harbor, which is a commodious and capacious bay, having sufficient water within, and also upon the bar near the mouth, for merchant vessels and small vessels-of-war. A survey of this harbor was begun many years ago, but never completed, and no projects for defence have been made. It is probable that a work placed near Moscheto creek, or on Winyaw Point, would give adequate strength, at the cost of about \$250,000.—(Class E.)

Santee river and Bull's bay.—About ten miles south from Georgetown are the mouths of the Santee, the largest river in South Carolina. It is not known whether the bars at the mouth of this river have sufficient water for sea-going vessels. The same uncertainty exists as to the depth into Bull's bay. It may be sufficient to consider these, and the other inlets between Georgetown and Charleston, as calling for small works capable of resisting boat enterprises, and to assign as the cost \$100,000. Should they prove to be navigable for privateers, they will require a larger expenditure.—(Class F.)—\$100,000.

Charleston, S. C.—This city, situated at the junction of the Ashley and Cooper rivers, is about five miles, in a direct line, from the sea. Between it and the ocean there is a wide and safe roadstead for vessels of any draught. Upon the bar, lying three or four miles outside of the harbor, there is, however, only water enough for smaller frigates and sloops-of-war. On the southwest side of

the harbor is James's island, in which are several serpentine passages, more or less navigable for boats, barges, and small steam vessels; some of them communicate directly with the sea and Stono river. Whappoo cut, the most northerly passage from the Stono to Charleston harbor, enters Ashley river opposite the middle of the city.

Interior natural water communications exist, also, to the southwest of Stono river, connecting this with North Edisto river; the latter with South Edisto and St. Helena sound; this, again, with Broad river; and, finally, this last with Savannah river.

On the north side of the harbor of Charleston lies Sullivan's island, separated from the main by a channel navigable only by small craft. On the northwest side of this island is an interior water communication which extends to Bull's bay, and even beyond, to the harbor of Georgetown.

From this sketch it is apparent that it will not do to restrict the defences to the principal entrance of the harbor.

The lateral avenues must also be shut. And it is probable that accurate surveys of all these avenues will show that the best mode of defending them will be by works at or near the mouths of the inlets, as the enemy will be kept thereby at a greater distance from the city; the lesser harbors formed by these inlets will be protected, and the line of interior water communication will be inaccessible from the sea.

No position for the defence of the principal entrance to Charleston harbor can be found nearer to the ocean than the western extremity of Sullivan's island. This is, at present, occupied by *Fort Moultrie*—a work of some strength, but by no means adequate to its object; its battery being weak, and the scarp so low as to oppose no serious obstacle to escalade. How far this work, by a modification of its plan and relief, may be made to contribute to a full defence of the harbor, has not yet been determined. But so long as it is the only work at this, the principal point of defence, it must be kept in good condition for service, and no alterations that will disturb this efficiency should be undertaken.—(Class A.)

On a shoal nearly opposite Fort Moultrie a new fort has been well advanced, which will have a powerful cross-fire with *Fort Moultrie*. This is called *Fort Sumter*.—(Class C.) To complete this fort will require, it is estimated, \$150,000.

In the upper part of the harbor is *Castle Pinckney*, on Shuter's Folly island. This requires some repairs, estimated at \$800.—(Class A.)

Stono, North Edisto, and South Edisto.—All these must be fortified, at least in such a manner as to protect these inlets from enterprises in boats or small vessels. To that end \$50,000 may be assigned to each.—(Class F.)

St. Helena sound.—The proper defences cannot be pointed out till the sound shall have been surveyed. Although there is supposed to be no great depth of water on the bar, it is known to be navigable for the smaller class of merchantmen and for steamboats, and to have a navigable communication with the head of Broad river, or Port Royal—intersecting the interior navigation between Charleston and Savannah. The estimate is \$150,000.—(Class F.)

Broad river, or Port Royal roads.—The value of this capacious roadstead, as a harbor of refuge, depends upon the depth that can be carried over the bar; on the distance of this bar beyond the line of coast; and on the means that may be applicable of lessening the danger of crossing it. This is supposed to be the deepest bar on the southern coast. Should there prove to be water enough for frigates, and should it be practicable to make the passage over the bar safe and easy by the erection of light-houses on the shore, and lights or other distinct guides on the bar, this harbor, situated within sixty miles of the city of Charleston, and twenty of Savannah river, intersecting the interior water communication between these cities, thereby securing the arrival of supplies of every

kind, would possess a high degree of importance not only as a harbor of refuge, but also as a naval station.

The survey of the exterior shoals, constituting the bar, should be made with the greatest care and all possible minuteness. Only when this shall have been done can the true relations of this inlet to the rest of the coast be known, and on this relation the position and magnitude of the required defences will depend. For the present the estimate made some years ago by the engineer department is adopted, namely, \$300,000.—(Class E.)

Savannah, and mouth of the Savannah river, Georgia.—Mention has been made of the natural interior water communication along the coast of South Carolina. A similar communication extends, south from the Savannah river, as far as the St. John's, in Florida. Owing to these passages, the city of Savannah, like Charleston, is liable to be approached by other avenues than the harbor or river; and, accordingly, its defence must have relation to these lesser, as well as to the great channels.

The distance from the mouth of Wassaw, or even the Ossabaw sounds (both to the southward of Savannah river) to the city is not much greater than from the mouth of the river; and an enterprise may proceed the whole distance by water, or part of the way by water, and part by land, from either inlet or from both. As in the case of like channels in the neighborhood of Charleston, it cannot now be determined where they can be defended most advantageously. It is hoped, however, that the localities will permit the defences to be placed near the inlets, because, thus placed, they will serve the double purpose of guarding the city of Savannah and covering these harbors, which, in time of war, cannot but be very useful.

The defence of Savannah river is not difficult. A fort on *Cockspur island*, lying just within the mouth, and, perhaps for additional security, another on *Tybee island*, which forms the southern cape at the mouth of the river, would prevent the passage of vessels up the channel, and cover the anchorage between Tybee and Cockspur.

Old Fort Jackson, standing about four miles below the city, must be maintained as a second barrier, both as respects the main channel and the passages which come into the river from the south, which last would not be at all controlled by fortifications on Cockspur or Tybee. *Fort Jackson* is accordingly undergoing the repairs and modifications necessary to give the proper strength and efficiency. Estimated to cost \$45,000.—(Class A.)

Fort Pulaski, a new work situated on Cockspur island, is, in all the most important matters, finished. Some further work has to be done, however, on the dikes of the island, on barracks, and quarters, and storehouses, and in the construction of an advanced battery. Estimated to cost \$35,000.—(Class B.)

To fortify *Tybee island* may require \$120,000.—(Class E.)

Wassaw sound, Ossabaw sound, St. Catharine's sound, at the mouth of Medway river; Sapelo sound, Doby inlet, Altamaha sound, at the mouth of Altamaha river; St. Simon's sound, at the mouth of Buffalo creek; St. Andrew's sound, at the united mouths of the Scilla and Santilla rivers; and Cumberland sound, at the mouth of St. Mary's river.—All these communications with the ocean are highly important as regards the line of interior navigation, and several of them as affording access to excellent harbors. The last and one or two others are known to be navigable to the largest sloop-of-war and merchantmen, and some of the others are but little inferior as regards depth of entrance or safety of anchorage.

Fort Clinch, a work now in course of erection at the mouth of *Cumberland sound*, is a most important contribution to the defence of this, the most southern of the Georgia entrances. Estimated to cost \$180,000.—(Class C.)

All the above-named openings, except that into *Cumberland sound*, have to

be surveyed. Some of them are probably easily defensible by forts and batteries, while others may need the aid of floating defences.

Nothing better can now be done than to assume \$200,000 as the average cost of defending each of the eight entrances, giving a total of \$1,600,000.—(Class F.)

St. Augustine, Florida.—This most southern of all the harbors of the Atlantic, and the key to the eastern portion of Florida, is accessible to the smaller classes of merchantmen, to privateers, and to steam vessels, and requires a certain amount of protection from attack by water. It is believed that adequate protection has been given by repairs bestowed upon the water battery of the old Spanish fort, (*Fort Marion*).—(Class A.)

SEA-COAST FROM CAPE FLORIDA TO THE MOUTH OF THE RIO GRANDE.

Fort Taylor, at Key West, is in a good state to be brought speedily into efficiency; the walls have been raised up out of the water almost to the sills of the lower embrasures; and with the sum asked for in the last estimates, the lower tier of embrasures might be got ready for the armament in a short time. Estimated to cost \$805,000.—(Class C.)

Fort Jefferson, Garden key, Tortugas.—This fort, which will perfectly command the admirable harbor lying in the heart of this group of keys, is advancing without the slightest impediment. The outer or counter-scarp wall first executed, because necessary to prevent the flooding of the island in gales of wind, has been completed, and labors are now bestowed on the main scarp. Estimated at \$989,862.—(Class C.)

Turning now to the shore of the Gulf, we find a portion, namely, from Cape Florida to Pensacola, that has never been surveyed with particular reference to the defence of the harbors. Within this space there are *Charlotte harbor, Tampa bay, Apalachicola bay, Apalachie bay, St. Joseph's bay, and Santa Rosa bay*. Nothing better can now be done than to assume for these the estimate formerly presented by the engineer department, viz: \$1,000,000 for all.—(Class F.)

It may be remarked, as applying to the whole Gulf coast, that, from the relative geographical position of this part of the seaboard and the country interested in its safety, from the unhealthiness of the climate, nature of the adjacent country, and mixed character of the inhabitants, it will be some time before that portion within supporting distance, whose welfare may be endangered by an enemy, will be competent of itself to sustain a serious attack from without. Upon the Atlantic seaboard the Alleghanics crowd the people down upon the shore, every important point on the coast being surrounded by a population dense now, and every day rapidly increasing in numbers; while the ocean and the interior parallel communications transmit rapid aid to the right and left. The coast of the Gulf, however, is thinly peopled in itself, is remote from succor from behind, and is almost inaccessible to lateral assistance. Those reasons, therefore, which tend to establish the necessity of an organized, permanent, and timely system of defence for the whole seaboard of the United States, apply to this part of it with peculiar force.

We now pass on to the remaining points of defence on the Gulf.

Pensacola bay.—The upper arms of this considerable bay receive the yellow water or Pea river, Middle river, and Escambia river. The tributaries of the last interlocking with the Alabama and Chattahoochee, seem to mark the route whereby, at some future day, canals will convey a part of the products of these rivers to Pensacola; while the qualities and position of the harbor, and the favorable nature of the country, have already marked out lines of railroad communication with a vast interior region.

Santa Rosa sound extends eastward, from the lower part of the bay, into

Santa Rosa bay. On the west the lagoons of Pensacola, Perdido, and Mobile bays, respectively, interlock in such a manner as to require but a few miles of cutting to complete a navigable channel from the first to the last named bay, and thence through an existing interior water communication to the city of New Orleans.

Pensacola bay has rare properties as a harbor. It is now accessible to frigates, and there is reason to hope that the bar may be permanently deepened.

The bar is near the coast and the channel across it straight and easily hit. The harbor is perfectly landlocked and the roadstead very capacious. There are excellent positions within for repairing, building, and launching vessels, and for docks and dock yards, in healthy situations. The supply of good water is abundant. The harbor is perfectly defensible. These properties, in connexion with the position of the harbor, as regards the coast, have induced the government to select it as a naval station and place of rendezvous and repair.

An excellent survey has been made of the bay of Pensacola, sufficing to form the scheme of defence for the town and harbor. Regarded, however, as an important naval station and place of rendezvous and repair which it now is, further surveys, extending a greater distance back from the shores, delineating accurately the face of the country, and showing the several avenues by land and water, are found to be necessary.

The defences of the water passage as projected are nearly completed.

Fort Pickens, on St. Rosa island, is finished.

Fort McRee, on Foster's island, is also finished; as is Fort Barrancas, on the site of an old Spanish fort. An old Spanish water battery has been thoroughly repaired, and placed in connexion with the last-named fort, and considerable progress has been made on a redoubt, in advance of the same fort. Permanent barracks in the same vicinity are about half finished.

The site of Fort McRee was, a few years since, seriously threatened by the abrasion of a new outlet from the lagoon that lies just behind it; but this danger has been averted, and by the erection of a low rampart exterior to the fort a permanent security against any recurrence of the danger will be provided, and place for a heavy additional battery acting on the channel will be prepared. At a future day it will be proper to extend this exterior protection. At present it is designed to execute only that part lying over or nearly over the outlet that was lately so threatening and so difficult to close. Estimated at \$204,000.—(Classes A, B, C.)

Perdido bay.—This bay is intimately related to Pensacola and Mobile bays, both as regards security and intercommunication, and should be carefully surveyed with a view to those objects. It must be fortified, and the cost may be \$200,000.—(Class F.)

Mobile bay.—The plan of defence for this bay requires a fort on Mobile Point, and another on Dauphin island. *Fort Morgan*, at the first-mentioned position is a finished work, in an efficient condition, but requiring, in the way of barracks and quarters, storehouses, &c., for the accommodation of its garrison, some further expenditures. These improvements are in progress—estimated at \$30,000.—(Class B.)

Fort Gaines, on Dauphin island, has been authorized by Congress, and the expenditure of the appropriation awaits only the settlement of title to the site, as to which there are supposed to be no remaining difficulties. Estimate, \$180,000.—(Class C.)

New Orleans and the delta of the Mississippi.—The most northern water communication between the Mississippi and the Gulf is by the passage called the *Rigolets*, connecting Lake Borgne and Lake Pontchartrain. The next is the pass of *Chef Menteur*, also connecting these lakes. Through these passages an enemy entering Lake Pontchartrain would, at the same time that he intercepted all water communication with Mobile and Pensacola, be able to reach

New Orleans from the southern shore of the lake; or he might continue onward through Lake Maurepas, Amite river, and Iberville river, thereby reaching the Mississippi at the very head of the delta; or, landing within the mouths of the Chef Menteur, he might move against the city, along the edge of the Gentilly road.

To the southwest of Chef Menteur, and towards the head of Lake Borgne, is *Bayou Bienvenue*, a navigable channel, (*the one followed by the English army in the last war*.) not running quite to the Mississippi, but bounded by shores of such a nature as to enable troops to march from the point of debarkation to the city.

These avenues are defended by *Fort Pike*, at the Rigolets; by *Fort Macomb*, formerly Fort Wood, at Chef Menteur; by a small fort at *Bayou Bienvenue*, and by a tower at *Bayou Dupré*.

The defences of the Mississippi are placed at the Plaquemine turn, about seventy miles below New Orleans—the lowest position that can be occupied. *Fort Jackson* is on the right bank, and *Fort St. Philip* a little higher up on the left.

Forts Pike, Macomb, Battery Bienvenue, and Tower Dupré, have been put in the most efficient state, and will perfectly accomplish the objects for which they were designed. They will still need some small expenditures in reference to security of site, extension of accommodations, &c. *Fort Jackson* is also in good condition as to its batteries, but will be much improved in that respect on the completion of an outwork now in hand. It needs also more barrack room. *Fort St. Philip* is a very old fort, and much dilapidated. Its position is so commanding and advantageous as to require the fort to be put in the best state, and much has been done to that end within a few years; still more is necessary for the fort itself and its dependencies; and all the barracks, quarters, and store-houses have yet to be built. Estimated at \$111,500.—(Classes A and B.)

The most western avenue by which New Orleans is approachable from the sea passes on the west side of the island of Grande Terre into Barrataria bay, which is an excellent harbor for a floating force, guarding the coasting trade on that side of the Mississippi. From this bay there are several passages leading to New Orleans.

Fort Livingston has been erected on the west end of Grande Terre island. This fort is kept from entire completion to await the cessation of a slight subsidence which has been going on for some time. It could be finished with the means now applicable at any moment by a few weeks' work.—(Class B.)

Proctor's Landing, Lake Borgne.—This position, which was overlooked in the original project for the defences of the city of New Orleans, has been already adverted to. A small battery, enclosing a tower, standing on the shore, would effectually close this avenue. The tower could not be carried by assault, nor the battery while protected by the tower. No landing could be made under its fire, and there is no other spot for a landing, owing to the swampy nature of the ground, but the site of the battery. Estimated at \$100,000.—(Class D.)

Several times in this report we have alluded to circumstances which would demand the employment of floating defences in addition to fixed defences upon the shore. We have here an instance in which that kind of defence would be very useful. Fortifications will enable us to protect New Orleans even from the most serious and determined efforts of an enemy; but, owing to the great width of some of the exterior passages, we cannot by fortifications alone deprive an enemy of anchorages, (especially that of Chandeleur island,) nor cover entirely the exterior water communication between the Rigolets and Mobile. We must, therefore, either quietly submit to the annoyance and injury that an enemy in possession of these passages may inflict, or avert them by a timely preparation of a floating force adapted to their peculiar navigation, and capable, under the shelter of forts, of being always on the alert, and of assuming an

offensive or defensive attitude, according to the designs, conduct, or situation of the enemy.

A floating force of this nature would be very useful in overlooking the coast eastward of New Orleans, especially the portion just mentioned, extending from the Rigolet (Fort Pike) to Mobile bay. And in connexion with the active service of such a force, and as a further defence of the approaches to New Orleans from that quarter, a fort on Ship island would be important. It would cover an excellent anchorage for the defensive flotilla and for other cruisers. With this refuge at one end of the base of operations, and at the other the anchorage between Pelican island and Dauphin island, guarded by works at the eastern end of the latter, a light steam squadron might, without being much exposed, be very effective.

Projects have not yet been made for works on Ship island, but it may be estimated that an adequate fort would cost about \$200,000.—(Class E.)

In this age of great improvements in the means of locomotion, it would be unwise to decide, without pressing need, on the details of the floating force required at certain points on the Atlantic and Gulf of Mexico coasts—perhaps even on the nature of the moving power. Although the probability undoubtedly is that the power will be steam, genius may in the interim devise something still better than steam.

And I may here remark, in relation to the preparation of steam vessels for warlike purposes generally, that wisdom would seem to direct a very cautious and deliberate progress. Every new vessel may be expected to surpass in important particulars all that had preceded, and to surpass the more, as each succeeding vessel should be the result of careful study and trial of the preceding.

It may be considered unreasonable to expect that steam itself will give way to some agent still more potent, and at the same time not less safe and manageable. But it certainly is no more than probable that steam vessels now under construction may be regarded almost as incumbrances within ten years.

A deliberate advance in this branch of naval construction is recommended the more, by our ability to construct these vessels in large numbers, when about to be needed, the timber being collected in the meantime.

COAST OF TEXAS.

In November, 1845, a special board of engineer officers was appointed to examine the coast of Texas in relation to its defence. Their report, submitted in February, 1846, was to the following effect :

The coast from the Sabine to the Rio Grande is about three hundred and seventy-five miles in extent. It is composed for nearly the whole distance of long, narrow islands and peninsulas, which lie parallel to the main land, forming several bays and lagoons, the inlets to which exhibit channels generally only suitable to the smaller classes of vessels.

Galveston bay is the most important one on the coast. Besides a number of bayous and small tributaries, it receives the waters of the river Trinity. This river is said to be navigable for six hundred miles for steamers of a light class, and, when improved, this navigation will doubtless be extended. The harbor is represented as being undoubtedly the best on the coast, the bar at the entrance having also the greatest depth of water. The charts submitted by that board show a depth of nine feet at low water and twelve feet at high water.

A permanent work is proposed for the defence of this harbor, of the class of that constructed on Grande Terre island, Barrataria bay. Its estimated cost is three hundred thousand dollars.—(Class D.) The construction of some Martello towers along the shore and across the island is deemed essential to the defence of the "Swash" channel and to the security of the town, Brazos Santiago. The board deem this harbor of equal importance with that of Galveston :

it has not much capacity, but is the only one in the vicinity of the Rio Grande. The bay at the pass has eight feet water.

The trade of the Rio Grande and of its dependent country passes overland thirty miles to Point Isabel, and from thence issues from the Brazos Santiago. The depth of water over the bar at the mouth of the Rio Grande being only four feet, admits the passage of very small vessels not suited to the purposes of commerce.

With reference, then, to the trade of the Rio Grande, and to a point from which military supplies could with the greatest facility be sent to the frontier, the defence of the Brazos Santiago is deemed by the board of equal importance with that of Galveston, and they recommend a permanent work, of the size, character, and cost of the one proposed for the latter place, estimated at three hundred thousand dollars.—(Class D.)

Matagorda bay.—It is deemed due to the extensive country washed by the rivers tributary to this bay, that its entrance should be defended. The difficulties, however, attending that entrance, and the navigation of the bay up to Matagorda and La Vacca, would seem to lessen, in a military point of view, the importance of its defence as compared with that of Galveston and the Brazos Santiago; but as a very good harbor for vessels drawing no more than eight feet of water is exhibited within the bay at Porto Cabello, and as it would afford convenient rendezvous for the light flotillas of an enemy, it is considered that a permanent work of secondary importance to those proposed for Galveston and the Brazos Santiago should be constructed for its defence. A small work, mounting some twenty-five guns, and estimated to cost \$175,000, is accordingly proposed.—(Class E.) The remaining inlets on the coast, either from the shallowness of the water, the comparatively little value of the harbors themselves, or the nature of the country immediately depending upon them, are deemed to require, at present, no other defence than that of a temporary character. They would depend upon the ultimate opening of a line of inland navigation, considered practicable between the Sabine and the Rio Grande; and the necessary work would be thrown up only in time of war.

GENERAL SUMMARY.

It may be of convenience to have here a summary of the principles contended for in the preceding remarks, and of the essential points contained therein.

1. Assuming that we may have wars with nations in possession of extensive naval means, we must consider ourselves likely to be attacked wherever there are objects tempting to an enemy, either from the spoil he might hope to gather, or the injury that through them he might hope to inflict. We must also consider that the power of the attack will be proportioned to the value of the object; and that, consequently, the means of defence should be of corresponding strength.

2. The mode of defence proper to our circumstances, as sustained by the consideration presented in the preceding remarks, and others of analogous nature: and as exemplified by the present, as well as by the former practice of all nations having an exposed seaboard, is believed to be a system of permanent fortifications, consisting of work adapted respectfully in their power to the value of the object covered, and applied, in times of peace, severally, in an order of time also fixed by the relative importance of the objects.

3. It is just this mode of defence that has been, to a great extent, built up in this country since the war 1812, and that should be carried to completion as rapidly as the means of the treasury will allow. The points that are *most* valuable are already, to a very important extent, covered by these defences. But among many points that are valuable, all are not equally so; while, for exam-

ple, New York has had much done for it, Baltimore has had little, and New Bedford—the *third* city in the Union for registered tonnage—almost nothing.

More than four thousand heavy guns may, however, as has before been said, now be mounted for the defence of places which it was necessary *first* to guard, in permanent fortifications that are equal to any in the world, in their respective grades, and placed, moreover, in the most effective positions. These are in, what are called in this report, classes A and B, namely, old works repaired and new ones completed, or nearly so, at a total cost of \$16,756,708.

Then follows the class of works in progress, (class C.) of which the remaining expenditures are estimated at \$5,028,194.

And then the class D, next to be commenced, in which there is no work that can be dispensed with, as must be evident on consulting the list, page 92. The cost of class D is estimated at \$4,083,000.

Then follows the class E, next in importance, of which the estimated cost is \$2,235,000.

As to those in hand, all have received the approbation of the government and Congress, and not one of those comprised in any other class can be begun without the particular sanction of both.

The last class, marked F, the most numerous of all, cannot be begun for many years, at any rate, and then only as the several positions shall, in the view of Congress, have risen to an adequate degree of importance. The estimate for that class is \$11,829,000.

4. Though facility of communication with the interior of the country, by railroads, would be an advantage in all cases where an enemy might land and conduct operations for two, three, or more days, there are few such positions that now have, or are likely to have, the advantage of such communications. Generally, the points of the coast attained by railroads are not points at which the people are deficient in numbers, but where they most abound; and besides, the attacks to which the coast will be liable, will be almost universally sudden attacks—attacks without warning—attacks that must be settled, one way or the other, before relief could come, even by railroad, and to which railroads could not supply relief, even were there time—men not being wanted to resist these attacks, but heavy guns, whether afloat or ashore.

The use of existing railroads, or of any railroad likely to be constructed, cannot, in general, therefore, affect materially a system of forts and batteries upon the sea-coast. There may be particular instances of partial benefit, but none is likely to occur wherein their use could justify the reduction of the power of fortifications otherwise necessary, much less the dispensing with such works altogether.

5. The application of steam to vessels-of-war is believed to act detrimentally to the defence of the sea-coast by opening new avenues of approach, and also by the suddenness and surprise with which attacks may fall upon any point. The first augments the number of the defensive works, and the second requires them to be at all times—at the opening of the war as well as during its continuance—in a state of perfect readiness for action. With the large steam navies now kept in commission by naval powers, there would be no state of transition between peace and war—no time for new defences to be prepared, nor for substituting new expedients even if any such would answer.

On the other hand, the use of steam vessels as a reliance for coast defence is attended with all the objections inherent in other modes of defence with vessels, and with some of the objections exaggerated. The objections that are inevitable are, inordinate expense and the perishable nature of the preparation; and to these are to be added uncertainty as to their proper state of readiness, and as to their sufficiency when ready. Steamers should in no case, therefore, take the place of shore batteries, when the use of the latter is not forbidden by

local peculiarities. As auxiliaries of fortifications they will always be useful, however, and as substitutes in the cases just supposed indispensable.

6. No improvements or inventions of modern times tend in any degree to lessen the efficiency of fortifications as means of coast defence, while the principal one, namely, the firing of shells from guns, unquestionably augments their relative power.

NORTHERN FRONTIER

The Secretary of War presents another interrogatory (the fourth) in the following words: "How far the increase of population on the northern frontier, and of the mercantile marine on the northern lakes, obviates or diminishes the necessity of continuing the system of fortification on those lakes?"

The system of defence for these lakes recommended by the joint board in 1840 (see Doc. 206, page 100) comprised the following works:

1. <i>Fort Brady</i> , at the straits between Lake Superior and Lake Huron. Estimated cost of repair	\$75,000
2. <i>Fort Mackinac</i> , at the junction of Lake Michigan with Lake Huron. Estimated cost of repair	50,000
3. <i>Fort Gratiot</i> , at the outlet of Lake Huron. Estimated cost of repair	50,000

Note.—All these are old works, long occupied by United States troops, and it is designed to give them further strength and means of accommodation for garrisons.

4. A new fort and barracks near Detroit. Estimated cost of construction (original)	\$250,000
Amount expended	171,755
Amount required to complete	66,000
5. Defensive works and barracks at Buffalo. Estimated cost of construction	\$150,000
Amount expended	116,500
Amount required to complete	33,500
6. Repair of old Fort Niagara. Estimated cost of repair	\$84,027
Amount expended	59,027
Amount required to complete	25,000
7. Repairs of old Fort Ontario. Estimated cost of repair	\$83,013
Amount expended	78,013
Amount required to complete	5,000

Note.—These two are old works, the former having been always garrisoned, I believe.

8. And a fort at the outlet of Lake Champlain. Estimated cost of construction	\$411,497
Amount expended	187,355
Amount required to complete	224,142

These, it was thought, should be executed as soon as the means of the treasury would allow.

And it was recommended in the above report, and in others on the same subject, that at the approach of war with England—

9. Works should be placed at the mouth of the Genesee river.
10. A fort should be built at Sackett's Harbor.
11. Another at a narrow part of the St. Lawrence river.
12. That a large barrack establishment should be prepared at Plattsburg.
13. Stone house, &c., at the head of the Kennebec and Penobscot.
14. A fort at Calais, on the St. Croix; and,
15. A large barrack establishment near Albany.

These last mentioned preparations for war (Nos. 9, 10, 11, 12, 13, 14, and 15) may still be left (as was designed) to be reconsidered at any time that such a certainty may seem to impend.

Nothing has yet been done to *Forts Brady, Mackinac, or Gratiot*, and, though the maintenance of these forts in a war with England would undoubtedly be necessary, they may, with less damage than the others, be left as the last, to receive all the additional strength their situations demand. In the meantime the indispensable repairs that small appropriations will accomplish should be provided for; for instance, a part of the very old wall of *Fort Mackinac* having fallen down, a small grant was asked last year for its repair, a request that is this year repeated.

Fort Wayne, the new fort near Detroit, has, since the date of the report above referred to, been built and is now in perfect condition, and there remains therein only the re-erection of officers' quarters destroyed by fire just after being completed, and the addition of some other quarters, storehouses, &c., the barracks being very nearly finished; the remaining expense being estimated at \$66,000.

Fort Ontario, at Oswego, has also been finished, with several entirely new quarters, storehouses, barracks, &c., together with a long sea-wall, found to be necessary to preserve the site. Only small grants, for slight repairs, will be needed for this work for some time, but of which one for nine hundred dollars is now asked. This fort is not a permanent one, and, if required to be maintained many years hence, may need repairs somewhat extensive.

Fort Niagara has received extensive repairs, and is in a defensible condition; but the expenditure having been restricted to the fortification proper and to the magazine, the accommodations for the garrison, which are remains of the old French work, are in a bad condition, and need repair for the health and comfort of the troops. A new hospital was hardly finished, a year or two ago, when it was destroyed by fire, originating in another part of the fort; which accident, with the similar one at *Fort Wayne* mentioned above, shows that economy even exacts that buildings be made fire-proof. The effect of this fire upon some palisading, as well as upon the hospital, and the decay of some wooden gun platforms, make a small appropriation necessary. The old stone houses will have to be rebuilt, though they may be kept up for a short time, and some enlargement must be given to quarters; all which will, perhaps, involve an expense of \$25,000.

At Buffalo, *Fort Porter* has been built, and is finished. It is a tower enclosed by a battery. It commands the entrance into Niagara river, and also the shore and anchorage in front of the city of Buffalo, nearly up to the mouth of Buffalo harbor. There is connected with the fort a good house for officers' quarters that was purchased with the site. There will be needed, further, another battery and tower, to be placed at or near the mouth of the harbor, at an additional cost, beyond the means in hand, of, say, \$33,500.

Such barracks as may be wanted at a future day may there be hired or hastily erected.

Fort Montgomery, outlet of Lake Champlain.—This fort is not less than half finished; indeed, considering the difficulties and expense that attended the making a foundation of piles under the whole fort, it may be said to be two-thirds finished. The remaining expense may be estimated at \$224,142.

We see, therefore, that of all the *new works* designed to be executed on the northern frontier, in anticipation of a war, there remains to be expended—

At Fort Wayne, Detroit, for buildings.....	\$66, 500 00
At Buffalo, for tower and battery.....	33, 000 00
At Fort Montgomery, outlet of Lake Champlain.....	224, 142 00
	<hr/>
	323, 642 00

On repairs of old works there is now, or soon will be, needed—

At Fort Niagara, say.....	\$25, 000 00
At Fort Ontario, say.....	5, 000 00
At Fort Mackinac, say.....	20, 000 00
	<hr/>
	50, 000 00

Making a total of..... 373, 642 00

If we add to this sum the estimates, before given, for—

Fort Brady.....	\$75, 000 00
Fort Gratiot.....	50, 000 00
Fort Mackinac, the balance after the above provision.....	30, 000 00
	<hr/>
	155, 000 00

There will be a grand total for the northern frontier of 528, 642 00

I thought it best to show first the actual condition of things on the northern frontier, before proceeding with a reply to the specific inquiries of the honorable Secretary of War.

The great length to which this report has extended, notwithstanding that a sincere desire to keep it within more reasonable limits has induced me to omit considerations that I wished to adduce, must now restrict my remarks, referring to some previous reports wherein the subject of our northern defences have been specially treated—I mean, particularly, first, a report of a special board of engineer officers, addressed to the Secretary of War, December 27, 1838; second, a letter from the chief engineer to the Secretary of War, of February 20, 1839; and, third, a report to the Secretary of the Navy, from a joint board, consisting of Commodore Morris and the chief engineer, dated November 18, 1845.

It is undoubtedly true that the augmented population and extended navigation of the upper lakes will afford great resources in that quarter to the nation, on the occurrence of a war with England, and there seems to be a feeling with many that in such an event a great flood of armed men would sweep across the whole surface of Canada, effacing all organized resistance, and trampling down all opposition. That this is possible may not, I suppose, be questioned, but that it will not be done is certain, if there remain in our councils firmness to resist all such fruitless impulses, and wisdom to see and pursue the proper course.

All Upper Canada might be thus swept, from Lake Superior down to Montreal, without a real conquest of the country, and, indeed, without gaining any advantage of vital moment. Kingston, in all that distance, is the only place at which anything like a serious impression would be made upon the military means of defence; and, as the flood should pass away, all that part of the province, if loyal before, would not be made less so by the desolation spread around.

No solid resistance would be made to such an inroad, and there being no fortifications worth defending in a way to compromise the safety of the regular troops, these would retreat before it, accumulating, as they receded, into the lower province, where would be found, supported by the most formidable natural obstacles, not the force of Canada, merely, but also the army and navy of England, in daily communication with the mother country, and where would have to be fought and won the battles which alone would secure a conquest. Any place of operation that contemplates overrunning Upper Canada, or making such attacks upon it, would be costly, beyond all calculation, in life and treasure, and unnecessary and fruitless after all. A country is conquered by concentrated efforts of well appointed armies upon vital points, often a single point—a levy en masse is the great resource of defence; a well prepared and well appointed army is the only reliable, as it is also, by far, the cheapest means of invasion.

If we send a single army into Canada by Lake Champlain and the peninsula lying between the Richelieu and St. Lawrence, and possess ourselves of Montreal, or of both shores of the St. Lawrence at any place below that city, where the channel can be commanded, all the wide extent of the British possessions above that point will be paralyzed, being entirely cut off, not only from the mother country, but also from all relief from Lower Canada, including Quebec, and from the provinces of New Brunswick and Nova Scotia. To do this a great battle must be gained—probably on the peninsula just mentioned, and, being gained, must be followed up by other victories, ending in the capture of Quebec—the last barrier that can be manned by the British. The policy of the defence will be, while keeping an eye upon any preparations for the attack just mentioned, by every resort, device, and effort, to agitate the frontier above, and thereby draw the attention, and, as far as possible, the means of our government to the defence of that frontier. They will generally expose there but few regular troops, but will collect volunteers, militia, and Indians in as large numbers as possible. They will detach thither bodies of ship-carpenters and sailors, and make great efforts to obtain and keep a naval ascendancy, if not everywhere, at least wherever possible.

This was exactly the policy followed by the English during the war of 1812, and with full success. By judgment, perseverance, and activity, they kept the strength of this country so attenuated by stretching along a frontier of many hundred miles, that no great effort could be made anywhere; and upon the true point of attack reduced the efforts to means so feeble as to end only in discomfiture and disgrace. Our government had its attention always, more or less, turned in the right direction, and several times attempted to assemble armies on the Champlain frontier, but always withdrew these troops, giving way to clamor raised by other frontier districts that were assailed, or believed themselves endangered by British enterprises.

The British took Chicago, Mackinac, Detroit; besieged Fort Meigs; attacked Fort Sandusky; captured Black Rock and Buffalo two or three times; they fought the battles of Chippewa and Lundy's Lane; besieged and assaulted Fort Erie; they captured Fort Niagara and Fort Ontario; attacked Sackett's Harbor; took Ogdensburg, French Mills, Malone, &c., &c. All these certainly for no design or hope of conquest and extended occupation, but for the purpose of keeping up an excited state of feeling and an energetic warfare that would fully occupy this government. When in 1814 the assembling of six or seven thousand men at Plattsburg, under General Izard, seemed to threaten their weak point, the English forthwith began to concentrate their best troops in opposition, and no sooner was that general withdrawn to re-enforce the Niagara frontier than this English force dashed forward in hopes, by profiting of our weakness, to make themselves masters of the lake, and thereby cover for an indefinite period their vital point.

If there has been a great increase of power and reasoning in the United

States since the war of 1812, there has on the other hand been a great change of the same sort in the population, and also in the military means of Canada.

The Rideau canal opens a communication between Montreal and Lake Ontario, and the Welland canal between Lakes Erie and Ontario; and good roads and canals from Toronto, on Lake Ontario, to Lake Huron, all deep in the heart of the country, and not to be intercepted except by victorious armies. All the light draught war steamers of Great Britain can be sent fully armed, provisioned, and manned, directly from sea up to the very head of Lake Ontario; and we can now do nothing whatever, and shall be unable to do anything, except by the erection of a fort at some commanding point on the St. Lawrence to stop this transit. War steamers or other armed vessels, though of smaller size, may branch off from this main line into Lake Champlain, and others into Lake Erie. Besides, the number of British merchant steamers on Lake Ontario and the St. Lawrence, above Montreal, is greater than of American steamers; and between Montreal and Quebec there are several of the largest size, so that as many troops as they might desire to send could be transported in twenty-four hours from Quebec to Montreal; in two or three days to Kingston; and in three or four days to the head of Lake Ontario and the shores of Lake Erie. They have, moreover, a strong new fortification at Kingston which will require a siege to reduce, and which, with other defences, covers a large naval depot and also the outlet of the Rideau canal. Under these and other circumstances favorable to the power of Canada, the relative numbers of the people of the two countries afford no measure of relative strength for military purposes, especially at the beginning of a war; and even as to numbers we shall find the difference less when we call to mind that the people of the British islands are quite as near in time to this frontier as our more remote States, and that the help those islands will send will consist of war steamers and regiments of disciplined troops. It will not be with Canada alone that we shall have to contend, but with Canada and Great Britain—the latter a nation always ready with great military power, and prepared with naval means to throw a large army upon the lake shore as soon, at least, as we should be ready to face them with our undisciplined levies.

Our plan of operations being to move forward from the foot of Lake Champlain as a base, we should not permit any demonstration nor any real attacks from Canada upon the frontier above, to direct us, although great efforts will undoubtedly be made to that end all along the line from Montreal to Lake Superior.

We have not now, and without great and costly efforts could not acquire, the naval ascendancy on Lake Ontario and on the St. Lawrence. We could not attain to it at all without putting our building establishments under cover of fortifications.

By the time one half dozen merchant steamers on Lake Champlain could be prepared and armed, the English might pour into the lake through their canals adequate naval means, supplied by Montreal, Quebec, and the St. Lawrence, to make the struggle for the mastery on that lake a doubtful one at least. If they could think it possible that we should fail to fortify the outlet of the lake, the contemplated enlargement of the canal from Chambly to St. Johns, (about twelve miles,) whereby war steamers could pass into that lake as they now may into Lake Ontario, would undoubtedly be executed.

Upon Lakes Erie, Huron, and Michigan we unquestionably have a great superiority in naval preparation, which is likely moreover to increase from year to year; and if timely care be taken to arm and man a suitable portion of these, the mastery may be retained.

If there be truth and force in the foregoing statements and opinions, a war with England will begin with the naval supremacy against us, along the whole range of the St. Lawrence and the head of Lake Ontario; with means in the enemy's hands of contending for at least, if not seizing, a like supremacy on

Lake Champlain, with the power of throwing troops, mechanics, and sailors in a few days upon the shore of the upper lakes, and with the strongest inducements to keep up then an active warfare. The possession of a naval depot at Pentanqueshin, on Lake Huron, which it is understood can readily be made a strong place, and where there is now one war steamer, and the easy communication with it from Toronto would allow enterprises to be prepared and sent at favorable moments against the establishments and commerce of the upper lakes. But an anchorage under the defence of *Fort Mackinac* as a place of rendezvous and watch for our own steam squadron, and a place of refuge in case of disaster, would be very important in counteraction of any such project. *Fort Gratiot*, when strengthened, would prevent any such hostile expedition from passing through the strait in Lake St. Clair and endangering Detroit, while it would cover any of our vessels retreating to that end of the lake. *Fort Wayne, near Detroit*, will prevent the passing of any vessel between Lakes Huron and Erie, while it would become the rallying point of the militia of that region assembled to meet threatened attacks of a serious nature, or to organize expeditions into the opposite territory, and its garrison would protect the neighborhood from all predatory inroads.

Even on Lake Erie, where we might have the means of arming and manning any number of steamers, we should derive important if not indispensable aid from batteries, duly prepared at Buffalo. The English now own several good steamers on this lake, and by the aid of the Welland canal they could bring in others, and they could also soon build a number within harbors secure and near; so that we may reasonably look for vigorous efforts of that nature if we leave our great places uncovered. The proposed battery and tower, in addition to the one already constructed at Buffalo, will place that city out of danger of conflagration, bombardment, or contribution, a security otherwise to be attained only by keeping it constantly covered by a number of war steamers greater than the enemy can bring. There can be no comparison as to the expense of the two modes, while the naval defence will be subject to all the chances of absence, at the moment of need, on other duty; of being enticed away by other real or fictitious attacks; of being dispersed for a time by tempests, &c. Other important places on the lake shore will be distant comparatively, not under constant supervision from the Canada side, less valuable, and for these and other reasons may, with less damage, be left to such defences as temporary and hastily prepared works may supply. The two batteries at Buffalo would cover the whole face of the shore, so that no vessel could lie within reach of the city without coming under their fire, and the towers would guard these guns from being spiked in any attempts at surprise.

On Lake Ontario, with the exception of some slight repairs, all has been done that has been proposed for the present. But we have seen that we shall here be under the naval command of the English, and must, therefore, make timely preparation to avert the more serious consequences.

On the St. Lawrence we should, as soon as possible after a war becomes probable, erect a work to command its navigation; and we ought, also, then to do something for the protection of Ogdensburg.

The obvious advantages afforded by our occupation of the outlet of Lake Champlain would seem to require nothing to be added to the preceding remarks. I may say, however, that the fort now under construction, and more than half finished, will give to us the control of the lake beyond all doubt, and retain it in spite of the energetic efforts that its great importance might induce an enemy to make for its capture or reduction. It will keep all the shores of the lake, as well as its surface, free from any hostile irruption, because no expedition could penetrate, on either side, without exposing itself to be cut off by troops landed in its rear, and it will secure the inappreciable advantage of taking the armies destined to the conquest of Canada, together with all their supplies, up to the

very frontier with all the velocity of steam; it will bring all re-enforcements with the same rapidity and certainty; and, moreover, in case of reverses it will establish a limit to retreat—a place of shelter, refreshment, and a base for renewed operations.

It is necessary to consider that this point is so near to the point of concentration of the English, in the case we have supposed, that no temporary work could be prepared in time, or if prepared would be competent to resist, unless very strong, extensive, and defended by a large body of troops.

If these defences be not carried to completion we may look with certainty to see the English widen and deepen the Chambly canal, a trivial operation, and at the very beginning of a war throw a squadron of war steamers into the lake, from which they could not be driven but by infinite cost and much sacrifice of life and loss of time.

I forbear to enlarge further on this and other important matters connected with this frontier system of defence, again taking the liberty, if the subject be deemed worthy of further pursuit, to refer to the special reports before mentioned, and also to that in document 206. In these reports will be seen views in relation to the embodying militia forces in support of the lake frontier, and also in support of the frontier eastward of Lake Champlain, as well as other ideas supposed to have an important bearing on the topic.

No speculations are ventured as to a possible change in the political condition of Canada. Until Great Britain shall willingly relinquish her dominion we may be certain that all her energies will, if necessary, be exerted in its maintenance; and whether this be for ten years or for a century, the defensive system herein advocated, as dictated by forecast and prudence, should be steadily adhered to; for, up to the moment of relinquishment, if such moment ever arrive, the defences may be growing more and more necessary.

The considerations detailed in the preceding remarks, and others with which it does not seem necessary further to burden this long report, permit me to make no other reply to the fourth inquiry of the Hon. Secretary of War than that no change has occurred, or is likely to occur, that will justify the relinquishment of the system of defence for the northern frontier, of which system the portion designed to be first prepared and to be permanent *is now nearly completed.*

Statement of the number of fortifications which have been built, including those nearly completed under the general system adopted after the war with Great Britain, the number in progress of construction, and the number not yet commenced, but proposed to be erected; and exhibiting, also, the States and Territories in which the several forts are situated, or are to be located; when they were commenced, when completed, and when they are expected to be finished; the number and calibre of the guns mounted or to be mounted; the estimated cost of construction and armament, respectively; the amount expended for construction or repair, and an estimate of the amount required to finish or construct; and the total amount required to be appropriated to complete the armament.

Designation of the works and State in which located.	Garrison in peace—companies.	Garrison in war—number of men.	When commenced.	When completed.	Estimated cost of construction or repair.	Amount expended for construction or repair.	Amount required to complete construction or repair.	ARMAMENT, INCLUDING 100 ROUNDS OF AMMUNITION FOR EACH PIECE.													Total number of guns.	Estimated cost of armament, including one hundred rounds of ammunition.				
								42-pounders.	32-pounders.	24-pounders.	18-pounders.	12-pounders.	Field pieces.	Flank howitzers.	8-inch howitzers, heavy.	8-inch howitzers, light.	13-inch mortars.	10-inch mortars, heavy.	10-inch mortars, light.	8-inch mortars, light.			10-inch stone mortars.	Coburns.		
1. Fort Brady, Michigan*.....	1	300	.....	.....	\$75,000	.....	\$75,000	.....	10	5	3	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35	\$18,953	
2. Fort Mackinac, Michigan*.....	1	300	.....	.....	50,000	.....	50,000	.....	10	.....	5	3	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	30	\$25,613
3. Fort Gratiot, Michigan*.....	1	300	.....	.....	50,000	.....	50,000	.....	10	.....	5	3	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	30	\$25,613
4. New Fort Barracks, n'r Detroit, Mich.*.....	1	300	1841	.....	250,000	\$171,755	66,000	.....	23	20	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	63	44,794	
5. Works at Buffalo, including Fort Porter, New York*.....	1	300	1843	.....	150,000	116,500	33,500	.....	44	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64	51,908	
6. Repair of old Fort Niagara, New York*.....	1	300	1840	.....	84,027	59,027	25,000	.....	.....	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91	12,261
7. Repair of old Fort Ontario, New York*.....	1	300	1839	.....	83,013	78,013	5,000	.....	.....	20	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	18,610
8. Fort at the outlet of Lake Champlain, New York*.....	1	520	1841	.....	411,497	187,355	224,142	.....	64	13	.....	.....	3	40	32	.....	.....	.....	.....	.....	.....	.....	.....	.....	164	132,386
	8	2,600	.....	.....	1,153,537	612,650	528,642	.....	84	79	63	41	12	73	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	455	330,068

* Expected to be completed within about one year after the amounts required to complete shall have been appropriated.

The inquiries embodied in the resolutions of the House of Representatives, and those specified in the letter of the Hon. Secretary of War calling for this report, have seemed to me to require that the several topics should be gone into with some minuteness. Certain of these, moreover, having been often of late placed before the public mind in erroneous lights, according to my judgment, it appeared to be a duty of my office to press such considerations as might be calculated to satisfy the inquiries of the unprejudiced and uncommitted of the necessity of a permanent system of defence, and of the adaptation to our wants and circumstances of a system of fortification.

Were it not for the length and diffusion of the preceding remarks, of which I am fully conscious, but which I have not time to condense, I should have introduced other considerations of like tendency and of much weight.

As it is, in the full knowledge of our remaining weakness at many important points, and under a deep conviction of the grave consequence likely to flow from tardiness in the prosecution of the system, or interruption to its progress, I feel constrained to invoke for it, with all admissible earnestness, the prompt and liberal support of the Executive and Congress.

At the same time, I only fulfil a further duty in warning the same authorities against relying on means that, though inordinately expensive, will be but temporarily of use, and insufficient while they last, instead of those adopted by all enlightened, experienced nations as relatively cheap as permanent, and in all respects adequate.

COAST OF THE PACIFIC.

Several works of defence will be required for this coast. The special board of engineers organized for its examination, whose province it is to project the necessary works, have but just commenced their sessions, and have had the time to examine and determine on the location of a single fort only. This is on the southern side of the entrance to San Francisco bay, where a work will undoubtedly be required.

For the other points of the coast no positive information as to the locality, size, and cost of works can now be offered. The joint commission of naval and engineer officers who recently made a reconnoissance of the coast, without the means of minute examination, suggest several points that will probably require defence in the course of time. These positions they designate as requiring fortifications to be commenced immediately, namely, *San Francisco bay*, *San Diego harbor*, and the *mouth of Columbia river*; and the department is disposed to rely confidently upon the opinion of the intelligent officers composing the commission.

Several other points they also suggest as ultimately requiring defence, submitting estimates of cost. The number of these works, as well as the cost, must be taken as conjectural until a thorough examination can be made.

The localities specified, with approximate cost of works, are as follows:

"The commission of navy and engineer officers constituted by the President for the purpose of making an examination of the coast of the United States lying on the Pacific ocean, with reference to points of defence and occupation, for the security and accommodation of trade and commerce, and for military and naval purposes," * * * * state:

"The several works required for the defence of harbors, roadsteads, rivers, sounds, &c., upon the coast of the United States on the Pacific will be shown in the following tables, arranged in the order of their relative importance, in three classes, with approximate estimates of their cost; each class being shown in a separate table, and the heading being applicable to all the tables."

Sites of fortifications.	Their denominations.	Approximate estimate of cost.	
		On the Atlantic.	On the Pacific.
FIRST CLASS.—TO BE BUILT WITHOUT DELAY.			
South shore San Francisco bay, channel entrance.....	Battery	\$400,000	\$1,600,000
North shore San Francisco bay, channel entrance.....	.....do.....	400,000	1,600,000
Alcatraz island, San Francisco bay.....	.....do.....	150,000	600,000
Cape Disappointment, mouth of Columbia river.....	Redoubt, with battery.....	200,000	800,000
Point Adams, mouth of Columbia river.....	Fort, with battery.....	300,000	1,200,000
Punta de Guanos, San Diego.....	Battery, with coverface.....	400,000	1,600,000
Total.....	.....	1,850,000	7,400,000
SECOND CLASS.—TO BE BUILT AT A LATER PERIOD.			
Santa Catalina island.....	Fort, with battery.....	\$400,000	\$1,600,000
Entrance to Humboldt harbor.....	Redoubt and battery..	150,000	600,000
Entrance to Klamet harbor.....	.....do.....	150,000	600,000
Neat island, (Scarborough harbor).....	.....do.....	100,000	400,000
San Pedro roadstead, (island).....	.....do.....	100,000	400,000
Monterey roadstead.....	.....do.....	150,000	600,000
Santa Barbara roadstead.....	Battery and tower....	50,000	200,000
Estero bay.....	.....do.....	50,000	200,000
Entrance of Umpqua or of Cahons.....	.....do.....	50,000	200,000
Bodega roadstead, (island).....	Battery.....	50,000	200,000
Total.....	.....	1,250,000	5,000,000
THIRD CLASS.—TO BE BUILT AT A REMOTE PERIOD.			
Port Lawrence, (Admiralty inlet).....	Redoubt and battery..	\$150,000	\$644,000
Port Townsend, Straits of Fuca.....	.....do.....	150,000	600,000
Port Discovery, do. {	West cape.....	.....do.....	.....do.....
	East cape.....	.....do.....	.....do.....
	Protection island.....	.....do.....	.....do.....
Narrows of Puget's Sound.....	.....do.....	150,000	600,000
Entrance of Hood's canal.....	.....do.....	150,000	600,000
Gray's harbor, mouth of Chiboby river.....	Battery and tower....	50,000	200,000
Point José, San Francisco bay.....	Temporary battery....	20,000	80,000
Angel island, San Francisco bay.....	.....do.....	20,000	80,000
San Pedro.....	.....do.....	10,000	40,000
Santa Barbara.....	.....do.....	10,000	40,000
Total.....	.....	710,000	2,840,000
Aggregate.....	.....	3,810,000	15,240,000

In conclusion, I have to refer to a tabular statement of all the fortifications erected, under construction, or intended to be built on the Atlantic and Gulf frontier of the United States, said fortifications being arranged in classes, according to the order of importance, and, within each class, according to the geographical order of the States in which they are situated.

The statement exhibits the amounts expended, or to be expended, for fortifications and for the armament; as also a specification of the armament.

Very respectfully, your most obedient servant,

JOSEPH G. TOTTEN,

Brevet Brig'r General and Col. of Engineers.

Hon. C. M. CONRAD, *Secretary of War.*

E.

Letter to the Secretary of the Navy.

WAR DEPARTMENT, *Washington, June 17, 1851.*

SIR: I herewith enclose a copy of certain resolutions adopted by the House of Representatives at the last session of Congress.

With a view to procure such information as will enable me to prepare the report called for by the House of Representatives, I have propounded to several officers of the engineer corps certain questions, to which they are desired to give their separate answers.

I desire also to obtain the opinions of several naval officers, combining professional science with experience and practical skill on several points connected with the proposed inquiry.

You will therefore oblige me by enclosing a copy of the within resolution to such officers as you may select, and requesting their separate opinions, in writing, on the following points, viz:

1. To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?

2. What reliance could be placed on vessels-of-war or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?

3. Is it necessary or expedient to continue the system of fortifications on the shores of the northern lakes?

Very respectfully, your obedient servant,

C. M. CONRAD, *Secretary of War.*

Hon. WILLIAM A. GRAHAM, *Secretary of the Navy.*

No. 1.

Report of Commodore Morris.

WASHINGTON, *July 12, 1851.*

SIR: I have the honor to acknowledge the receipt of a copy of your letter of June 17, 1851, to the Secretary of the Navy, with directions from him to report to you my opinions upon certain points connected with the present system of

fortifications for the defence of the coasts and shores of the United States, as it has been recommended by boards of engineers and others appointed in 1816 and at subsequent dates.

The particular points to which my attention is directed by your letters are:

"1st. To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvements of projectiles, or other changes that have taken place since it was adopted in the year 1816?"

"2d. What reliance could be placed on vessels-of-war or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?"

"3d. Is it necessary or expedient to continue the system of fortifications on the shores of the lakes?"

1. I have endeavored to ascertain, by an examination of some of the reports from the boards of engineers and other officers upon this subject, what system of defence they recommended, the bases of that system, the objects they proposed to accomplish by it, the particular measures which they suggested to secure those objects, and the data on which they determined the character and force of the respective fortifications which are embraced in their general plan of defence.

2. The *bases* of their system are: a *navy* composed of armed vessels capable of navigating the ocean with safety and of reaching distant points speedily.

Fortifications, permanent and temporary, with the auxiliaries of floating batteries, gunboats, and steam batteries, and both fixed and floating obstructions to channels.

Interior communications by land and water, and a *regular army and well organized militia*, all to be so combined as to form a complete system.

3. The objects of the system were to leave the navy free to protect our own commerce or to act against an enemy on the ocean or upon his unprotected coasts; to close all important harbors against an enemy, and secure them to our military and commercial marine; to deprive an enemy of all strong positions, where, protected by naval superiority, he might maintain himself and keep our frontier in continual alarm; to prevent, as far as practicable, the great avenues of interior navigation from being blockaded at their entrances into the ocean; to cover the coastwise and interior navigation, by closing the harbors and the several inlets from the sea which intersect the lines of communication, and thereby further aid the navy in protecting the navigation of the country; and to protect our great naval establishments.

4. To secure these important objects with all practicable sound economy, and in a manner which in time of war should require the least necessary interruption to the ordinary pursuits of our citizens, appears to have been the controlling motive in determining the position, character, and extent or force of the respective works which the boards have proposed.

5. Of these works *permanent fortifications* are mainly relied upon, and have preference over any of their auxiliaries wherever due security can be given without the aid of the latter.

6. The dimensions, form, and strength of each fortification appears to have been determined by the local topography, the importance of the interests which it was intended to secure, the character and amount of force by which it might probably be assailed, and the time which would be required to concentrate upon it a sufficient number of militia to secure it from capture by such assailing force.

7. Your first question requires an opinion of the expediency of any modification of the present system of fortifications in consequence of two specified causes, and of "any other changes that have taken place since it was adopted." It becomes necessary, therefore, to ascertain what "other changes" have thus occurred, and which would probably have led the boards of engineers to different recommendations, if the present state of things had existed when the plans were proposed.

8. Among these causes and changes the most important appear to be the dis-

covery of a channel leading from the ocean into the bay of New York, which could not be commanded by any of the fortifications proposed by the board; the application of steam power to armed and other vessels for ocean navigation; the great increase in the number and the size of the mercantile and packet steamers which are employed on our interior lakes, bays, and rivers, and the substitution of shells for solid shot to be fired from cannon; the introduction of the electric telegraph for communicating intelligence, and of railroads for the transportation of persons and materials; and a greatly increased and more dense population in the vicinity of many of the points which were intended to be protected against an enemy.

9. The operations of vessels which depend on the wind alone must always be uncertain, and the best devised plans will be greatly exposed to failure in execution by them. When used as an assailing force against batteries or other fixed objects, the winds which are necessary to carry them to their desired positions might frequently prevent the possibility of their retreat, if it should be desired. The present defences were calculated to resist a force of this character, or which depended on such vessels for its transportation.

Ships-of-the-line and armed vessels of smaller sizes are now moved by steam, either as the only motive power or as auxiliary to sails.

These vessels, under ordinary circumstances and for special purposes, may have their movements regulated and combined, at the will of their commander, with almost the same precision and certainty as can be accomplished by troops on land.

The capacity and armament of many of these vessels, connected with their light draught of water, enable them to operate with comparative ease and safety through channels and upon positions which would be almost secure against attacks by common sailing vessels.

10. When the present system was proposed, the use of explosive shells was only contemplated from mortars, either for attack or defence.

Arrangements are now made for the general use of such shells from large cannon, thus combining the superior accuracy of shot firing with the destructive effects of explosive shells—a change which greatly increases the dangers of a floating force when opposed to permanent fortifications of earth and masonry.

11. In determining upon the character and extent of many of the fortifications which were proposed by the boards an important element of their calculations was the facility or difficulty of concentrating troops upon the work in case assistance should be required to repel an attack by an enemy. This element of calculation has been greatly changed since by the increased density and amount of available population, and at many points by the greatly increased facilities for communicating intelligence by telegraphs and railroads, and for receiving reinforcements of men and supplies by railroads and steamers.

The purchase of Florida since the fortifications and defences for the Gulf of Mexico were proposed has given to us new and important positions for strengthening our defences on that frontier, and for giving greater security to the immense interests connected with the valley of the Mississippi. Our more recent acquisitions, which have given us an extensive ocean frontier on the Pacific ocean, have brought with them new interests, which require fortifications or other adequate means for their protection and security.

12. The increased power which has been given to vessels when moved by steam to regulate and secure their joint or separate action as may be desired, and to reach with comparative ease and safety places which might be considered as nearly secure against ordinary sailing vessels; the additional power which is given to fortifications when acting against ships or other floating force by the substitution of explosive shells for solid shot; the discovery of new channels to and from some of our harbors; the facilities for more rapid concentration of troops and supplies than was formerly practicable, and the acquisition

of large extents of new territory, are changes or causes which, in my opinion, may render some "modifications" of the details of the present system more advantageous. At least these changes appear to be of sufficient importance to justify, if not to require, preparatory to definitive action, a re-examination of the present system, as recommended by former boards, with the same thorough and careful deliberation which was bestowed when it was originally proposed.

13. In reply to your second question, "What reliance could be placed on vessels-of-war or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?" I respectfully state that, in my opinion, no *safe* reliance could be placed on any of the kinds of force enumerated in your question, as "substitutes" for permanent fortifications, unless they should be multiplied to an extent that would require an expenditure which would be unreasonably great, and much greater than would give equal security by a judicious combination of permanent fortifications and a floating force as auxiliary to them. On any sudden emergency, private steamers and other merchant vessels might be usefully employed in aid of other means which had been previously prepared, either by having them armed to contend with an enemy, or to bring forward reinforcements of men, materials, or other supplies. Little advantage could be expected, however, from the vessels for direct assistance, unless all that was necessary for their armanent and equipment had been previously prepared, and kept ready for immediate use.

14. The voluntary use of vessels-of-war, which are able to navigate the ocean, as substitutes for fixed fortifications, or even as direct auxiliaries to them, except in extreme cases, would, in my opinion, be highly injudicious. The proper employment of such vessels-of-war or of our navy is to afford all possible protection to our merchant shipping, to destroy or harass an enemy's commerce, and either by itself or in conjunction with troops to assail an enemy's possessions at points where they would otherwise be inaccessible to us.

15. The protection which the coasts of our country may justly expect from the navy is that which it may afford by intercepting forces which may threaten attacks upon it; or when unequal to that task, diminishing the means of an enemy for such attempts, by rendering it necessary for him to protect his own commerce or his own shores against our ships-of-war.

16. With a navy sufficiently powerful to compete fairly with that of an enemy, great additional security would be given to our coasts by it, and still greater if our naval force was decidedly superior. But even under these favorable circumstances the chances for avoiding the most vigilant watchfulness on the ocean are so great, that so long as we expect wars with nations having a respectable navy, sound policy and true economy, in my opinion, requires permanent fortifications at all points necessary to defend our important national establishments, our populous and wealthy cities, against sudden attacks, and to keep open, as far as practicable, our coastwise navigation and other communications, which might otherwise be interrupted by any enemy who could elude the vigilance of our navy. The navy, if employed as here suggested, would not render it as substitute for fortifications, but would give an increased security to our seaboard, and in proportion to its strength diminish the necessity of interrupting the ordinary pursuits of our population.

17. To the third question, "Is it necessary or expedient to continue the system of fortification on the shores of the lakes?" I state as my opinion that no future attacks from the Canada shores of the lakes, of a character sufficiently powerful to affect the final result of war, are to be apprehended; still, the advantages which are offered by the St. Lawrence and Rideau canals for the increase of a naval force on Lake Ontario might give to Great Britain a temporary superiority of naval force on that lake. This superiority, and the presence of a considerable body of regular troops which are always kept in Canada, might induce and possibly enable an enemy in Canada, by a sudden incursion,

to injure our great lines of communication by railroads and canals, on the lake frontier, or to levy contributions on cities near it, all of which would be greatly exposed if there were no fortifications to furnish military supplies for the surrounding militia, and so aid them in repelling such attacks.

18. Under existing circumstances it would, in my opinion, be expedient to continue the present system so far as to retain all the fortifications on the lake frontier which have been completed, and to complete such as have been commenced. The expense would be comparatively inconsiderable, and would no doubt be amply repaid by the increased security and other advantages which would be gained at the commencement of any war in which Canada would have the character of an enemy to us.

It has been difficult for me to confine my remarks very strictly to the precise questions which were submitted, but it was believed that the reference to "other changes" in the first question would be a sufficient excuse for the latitude which has been taken.

With much respect, your obedient servant,

C. MORRIS,
Captain U. S. Navy.

Hon. C. M. CONRAD,
Secretary of War.

No. 2.

Report of Commodore C. M. Perry.

NORTH TARRYTOWN, July 25, 1852.

SIR: In obedience to your order of the 23d ultimo, covering a copy of a communication of the Secretary of War, together with a copy of a resolution of Congress, calling for information upon the expediency of modifying the system of national fortifications established in 1816, I have the honor to report—

In reply to the first inquiry, as follows:

"To what extent, if to any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the inventions or improvement of projectiles, or other changes that have taken place since it was adopted in 1816?"

I may remark that, in my opinion, it is desirable that the system referred to should be substantially modified by an entire abandonment of the plan of *exterior* coast fortifications, and a confinement to the completion of the works already commenced for the protection of our principal ports of trade and naval depots; and that no greater number of works should be recognized as permanent means of defence of the more important points upon the seaboard than those that may be suitably garrisoned and kept in constant preparation, whether in peace or war, for repelling an enemy.

In the attempt to sustain the position which I propose to assume, being at my residence in the country, without proper documents or other data to enable me to enter fully into detail, I shall, with but two exceptions, refrain from alluding to the published statements and reports of others upon the subject; and while cheerfully according to those who may differ from me all credit for sincerity and patriotism, I may content myself with a general expression of opinion upon the question under investigation, calling particular attention to the report of Mr. Cass, when Secretary of War.—(See Doc. 293, 24th Congress, April 8, 1836.)

Concurring, as I most fully did at the period of its date, (1836,) and as I do now, in the opinion set forth in that masterly state paper, I might be satisfied in assuming the whole range of argument of that distinguished man, as exhibiting

my own views upon the great question of national defence, had not the imagination even of his prophetic foresight been outstripped by the extraordinary developments of the few subsequent years—developments which, though they have thrown into bolder relief the more prominent features of his prophecies, have gone far beyond the anticipations of the wildest visionary, bringing to light improvements in practical science utterly astounding to the theorists of yesterday, deranging all previous plans of war, whether by sea or land, and foreshadowing even further changes, perhaps equally remarkable; and thus showing that if the system, under things as they existed in 1816, was wisely devised, (a proposition I have never assented to,) there is no longer the remotest useful object to be gained by persistence in the plan, but rather on the contrary. The erection of isolated exterior works upon our seaboard would, instead of contributing to our protection, hold out assailable points, inviting attention from an active enemy, in the possibility of carrying them by *coup de main*—an achievement not so difficult since the use of steam for naval purposes; and when, moreover, it may be fairly presumed that these works, however extensive and complete in themselves, would in fact be *weak* as defences, for want of adequate garrisons; that is, if we are to judge from past experience and the present desolate condition of some of those already constructed, made necessary, it is true, for want of troops to send to them.

Let us suppose, for purpose of illustration, that the two works recommended in the original design to be erected on Sandy Hook bar,* (see report of War Department, House Doc. 206, 26th Congress, 1st session,) are completed, and garrisoned by the estimated number of rank and file assigned to them, say 1,760 each, their isolated position would place them beyond the effective range of guns planted upon Sandy Hook, the nearest land; and being encircled by channels navigable for the largest war steamers, they could not prevent the ingress of the enemy, and unaided by a friendly naval force might be surrounded by the hostile ships, who, if they did not surprise and carry them by escalade, would have the power to cut off their communication with the land, and consequently their supplies.

And let us suppose further, that in conjunctures like those growing out of the northeastern boundary and Oregon questions, where serious difficulties with Great Britain were anticipated by many, (and everybody knows that a similar contingency did happen under the administration of General Jackson, with France, and may again happen,) that these forts were completed, and armed, and garrisoned, as they probably would be in time of peace, with a single company or half company each, and it might be the policy of the enemy to enter suddenly into war, and give us the first intimation of hostilities by the appearance off the port of a powerful squadron of war steamers, not only would the forts on the bars, inviting attack by their very weakness, be at the mercy of the enemy, but the safety of the city itself would be compromised. For though by a delay of a day or two the inner line of forts could be garrisoned by militia and volunteers, and temporary steam batteries prepared in aid of the outer defences, if the opposing squadron were to be commanded by a *Nelson* or a *Suffren*, such precaution would be too late.

From any of the inner forts, should they perchance make a lodgement, the enemy could soon be driven; but once in possession of the outer line of works, with the sea open to them, the port would be entirely locked up; hence, in the possibility of such an issue, is it not far better that they should *not* be erected?

But many other solid reasons may be adduced to prove the impolicy of their erection. The impracticability of covering the whole extent of coast by for-

* I shall apply my remarks upon the seaboard defences more particularly to the port of New York, though they are intended to have a general bearing upon the whole coast.

tresses, commanding every port, bay, and roadstead; the improbability of any future attempt by an enemy to land an armed force upon our shores, except for some marauding purposes; and the perfect capability of the inner line of works, assisted by floating batteries to repel whatever force might venture an attack upon any of our principal cities or towns, except by *coup de main*, in which event, as I have before remarked, the outer line of works would prove of immeasurable injury, if captured, as some of them might possibly be by a dashing enemy.*

And, besides, we have the experience of history to show that extensive military works are alike destructive of the prosperity and the liberties of the people, saying nothing of the enormous cost of construction and the keeping them in condition for service. I may instance the fortresses of Spain, of Portugal, and of the former republics of Genoa and Venice, as gigantic works, now of little use, and looked upon by the voyager only as monuments of the extravagance and peculating spirit which, at the time of their erection, characterized the people of those governments.

Experience moreover shows that while the fortifications of San Juan de Ulloa at Vera Cruz, the Moro of Havana, the castle protecting the harbor of Carthage upon the coast of Columbia, the Venetian fortress of Napoli de Romania, in Greece, the castle of St. Elino, in Malta,† and many others of similar extent and character, are considered by some impregnable. They command only a circuit embraced within the range of their guns, and cannot in any manner prevent a landing of the enemy upon the coast beyond the extent of such range; in a word, these works are useful only to command the entrances of the ports which they were intended to defend, and to cover with their guns vessels anchoring in their immediate vicinity. The celebrated fortress of Gibraltar neither commands the passage of the straits nor the anchorage on the Spanish side of the bay of that name. They are, in truth, like chained monsters, harmless beyond the reach of their manacles; not so with their steam batteries—they have the means of locomotion, and *their* power can be made effective at any point upon the coast capable of being reached by an enemy's vessel.

Of all the coasts of Europe that of Great Britain is the least provided with fortifications, and yet her soil has not been trodden by a successful enemy since the conquest—solely protecting her military and naval arsenals by perfect and *well garrisoned* works. She depends mainly for defence of her coast upon her navy and the warlike spirit of her yeomanry; and the very absence of fortified works prevents a deceitful reliance upon such defences, and keeps alive the more gallant and more certain dependence upon their own personal prowess.

And thus it should be with us, man to man. The Americans are, at least, equal to any other race, and they are fully capable of driving back to their ships or capturing any number of troops that might have the temerity to land upon our soil.

Let us suppose that New York is menaced with an attack by a force much

* In speaking of militia and volunteers above I may add, by way of note, that the city of New York could alone parade, in six hours, one thousand, and in twelve hours, five thousand uniformed troops, composed of men in the prime of life, who would, doubtless, do good service before the enemy.

This body of troops is well officered and under excellent organization, and embraces fair proportions of cavalry, artillery, and infantry, with all the requisite materiel and munitions.

The cities and towns in the immediate neighborhood could furnish an equal number with the same expedition, and there can be little doubt that with the facilities of transportation by railroad and other modes, a force sufficient for all purposes of defence could be concentrated in a very short space of time at any point upon our coast north and east of Texas.

† I more particularly name these, among many others, for reason of being better acquainted with them by personal examination.

larger than the English have ever yet been able to concentrate upon our coast. The only assailable point which might promise any chance of success would be debarkation upon the south side of Long Island and to advance upon the rear of Brooklyn.

This mode of attack was contemplated during the war of 1812-'13, and extensive entrenchments were thrown up by the citizens upon a chain of hills just beyond the town designed to hold the enemy in check until re-enforcements could arrive from a distance;* but the rapid increase of the place has now brought these military sites within the corporate limits of the city, and it will be necessary, in the event of another war, to select more advanced positions on which to construct redoubts to command the approaches referred to, and it would be at this day a measure of wisdom for the government to take steps for selecting and securing the fee of suitable points for military purposes. These positions, judiciously chosen, would, at the moment of alarm, be occupied by myriads of militia and volunteers, who, judging from what was accomplished on a former occasion, would, in an incredibly short time, throw up and man the necessary works; with these precautionary measures, and with a respectable number of steam batteries as auxiliaries to the permanent works *already constructed*, New York would be safe from any *foreknown* attack of the enemy.

With respect to the second inquiry—

“What reliance could be placed on vessels of war or of commerce, floating batteries, gunboats, or other temporary substitutes for permanent defences?”

I reply that much reliance could be placed on all vessels-of-war, particularly those moved by steam, whether intended for ocean or harbor service, as auxiliaries to the fortifications, thereby lessening the necessary number and extent of those permanent works; but there could be no dependence on gunboats or vessels of commerce, except for the temporary conversion of the latter into public armed ships.

But the most reliable force for harbor defence as auxiliary to the fortifications would be steamers of war, in addition to which temporary steam batteries might be equipped at most of our principal ports.

It may be presumed that there is at this time but one opinion among naval men as to the utility of steamers-of-war. The strongest and most unreasonable prejudices growing out of professional predilections must now give way to the unmistakable evidences of their usefulness, and the absolute necessity of their employment at the present day in all naval operations.

These vessels should all be capable of traversing the ocean, and while efficient for ocean navigation, not the less effective for harbor or coast defence.

Steam batteries, so called in contradistinction to steamers-of-war, should be of a temporary character, and used only for the defence of ports, or bays, or roadsteads, and of these there would be no necessity of having many in commission, excepting at times when the enemy might be expected, as they could be prepared in a very short time—the cities and towns which they may be wanted to defend all furnishing the means of their equipment and the requisite crews.

In a communication accompanied by drawings submitted to the Navy Department some years ago, I demonstrated the practicability of equipping and manning at the port of New York powerful and efficient floating batteries in less than three days.

Wherever steam vessels can be found to furnish the moving power and small coasters to be used for floating the guns, as both can be found as well as guns at most of our largest ports, temporary batteries capable of attacking the largest sail ship can be speedily equipped, care being taken to protect, by a mode pointed out, the machinery and the entire hull of the steamer which, without being

* These works covered the rear of the navy yard, Brooklyn.

herself armed, is to furnish the power of moving the batteries from one point to another.

Modern discoveries in the use of warlike projectiles have shown, and especially in the use of explosive shells, that wooden bulwarks, however massive they may be, so far from giving protection to those behind them, cause by their splinters greater havoc; hence the inutility of such defences in the proposed floating batteries, which, by means of the steam power attached to them, may be easily kept at long range with the enemy and beyond grape or canister distance.

But no one can foretell or scarcely imagine the changes in the art of war that steam and other natural elements more recently brought into use are to produce.

On a late occasion I had the honor of suggesting to the Navy Department a new mode of attack by steamers-of-war. The opinions then advanced have been more and more confirmed by further reflection and consultation with intelligent engineers and ship-builders, and I am now well satisfied that, besides the use of an ordinary war steamer, as a striking body, in the manner explained in the communication referred to, a steam vessel, to be moved by a submerged propeller and capable of traversing any of our inland waters, may be constructed and advantageously used solely as a *projectile* (using the term in this sense.) This vessel should be long and narrow, and of unusual proportional depth to accommodate the engines and boilers, and the crew, (if desirable,) below the water line. She should be of wedge-shape forward, with the most approved lines for speed, considering her depth and her whole construction, whether built of wood or iron, of sufficient strength to give the requisite momentum, and the power to withstand the most violent shocks produced by collision with other bodies.

A vessel of this description, say of two thousand tons measurement, would weigh, with her machinery, &c., nearly four thousand tons, and might be propelled with engines of extra proportional power at the rate of fourteen statute miles per hour. We have thus a projectile (still using the term) of this weight moved upon the surface of the water at the velocity of twenty feet per second. Can any one imagine the overwhelming effect of a contact of this moving body with anything capable of floating upon the ocean? This is no visionary project, but one of simple demonstration and practicable accomplishment.

In reply to the *third* inquiry, as follows: "Is it necessary or expedient to continue the system of fortifications on the shores of the northern lakes?" I answer in the negative, and for the very obvious reason that we have now the command of the lakes so far as regards an aggregate superiority of tonnage and seamen, and it would be strange indeed if, with the well-organized militia of the States bordering on and contiguous to these waters, and the facilities for transportation to the scene of war of any number of regulars and volunteers with the requisite munitions, we did not, at the least, preserve the integrity of the soil, and the navy would be recreant to its former reputation did it not sweep from these inland seas every vestige of an opposing force.

In reference, therefore, to the foregoing remarks, I respectfully submit—

That no additional fortification be commenced on the Atlantic seaboard, leaving it questionable whether those already commenced should be completed *to the extent originally designed*.

That very great reliance can be placed upon steamers-of-war and steam batteries as auxiliaries to the military work now completed or in progress of completion.

And lastly, it is altogether unnecessary and inexpedient even to progress any further with the uncompleted works which have been commenced on the shores of the northern lakes.

For myself, I cannot entertain the idea that we are always to act on the defensive; on the contrary, it is more reasonable to suppose that, in the event of

another war, the power of the United States will be felt beyond their own immediate coasts; most certainly it ought to be, for we have the means of placing ourselves upon an equality of naval strength with any of the European nations.

Looking to the inexhaustible resources of the country, the warlike and adventurous spirit of the people, its extensive and rapidly increasing commerce, and the acknowledged superiority of the Americans in the construction and management of ships, whether navigated by sails or steam—is it not surprising that all our military plans have hitherto been confined to the mere defence of our fire-sides against an enemy, always supposed to be able, in order to reach us, to cross with a superior force *intact* a wide expanse of ocean, and knocking at our doors, to cause the whole country to be thrown into alarm?

Why should we barricade ourselves and wait within our defences the coming of the enemy? Why not do that which is more congenial to our national spirit—meet them beyond the threshold, and thus preserve our waters and our soil inviolate? We possess the power; why not exercise it? In truth, the destinies of the nation are inevitably leading to events which will sooner or later make us superior on the ocean, and instead of tamely waiting the approach of the foe, we shall be more apt to turn the tide of war eastward.

The great battles for national mastery are to be fought upon the ocean, and the sooner we prepare for the struggle the better.

Hence it is evident that upon the navy the country should chiefly depend for its protection from invasion, not under its present organization, but upon a navy commensurate in extent to the commercial resources and wealth of the nation; we should have naval strength sufficient to protect our commerce in every sea, and in time of war to assume the offensive.

Still it would be unwise to neglect a reasonable system of permanent defences upon the coast, but not by any means to the extent contemplated by the system of 1816.

In the opinions which I have ventured to advance upon the fortifications of the country I have intended to allude only to the Atlantic seaboard and the shores of the northern lakes. Believing that the seaboard on the Pacific ocean is infinitely more exposed to successful attack from either of the great naval powers of Europe—England, France, and Russia, and may require additional defences; but not being well acquainted with that coast, I abstain from any remarks upon the subject. In connexion with this report, however, I propose to submit, at a future time, some remarks upon the importance of securing the naval command of the Gulf of Mexico, with special reference to the better protection of our Pacific possessions.

With great respect, I have the honor to be your most obedient servant,
M. C. PERRY.

No. 3.

Report of Commander R. B. Cunningham.

UNITED STATES NAVY YARD,
Gosport, Virginia, September 29, 1851.

SIR: In pursuance of an order from the honorable Secretary of the Navy, dated June 23, 1851, enclosing a copy of a letter from you to him, with a copy of certain resolutions of the House of Representatives of the last session of Congress, pertaining to a proposed modification of our system of defences by means of fortifications on shore; and directing that I should give to the subject

my best reflections, and communicate the result in season to be reviewed by you prior to your report in obedience to resolutions aforesaid in December next.

With a diffidence I have never before experienced in drawing up an official communication, I will endeavor to give you my views on this important question of national policy with as much brevity as its magnitude will admit of; but I beg leave to state that, while I feel myself highly honored by the consideration so undeservedly bestowed upon me by the honorable Secretary of the Navy in selecting me for a duty of so much consequence, and which calls for scientific attainments in its execution that I do not aspire to, I must claim your indulgence when, in all sincerity, I state to you that my remarks are drawn from my very limited practical observation and experience only.

To the first inquiry, viz: "To what extent, if to any, ought the present system of fortifications for the protection of our seaboard to be modified in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?"

I would respectfully reply that the important improvements in the application of steam to ships-of-war and sea-going ships, and the certainty that railroads will be continuous in a few years from Maine to Texas, and that by these facilities, troops, munitions of war, and stores of all kinds can be transported with such expedition that in a very short space of time large bodies of men, with the necessary artillery, can be concentrated upon any intermediate point between permanent fortifications fully prepared to meet an invading foe before an invader could make any material progress in the erection of fortifications for his defence, should, in my opinion, induce the government to direct its attention alone to those points in our seaboard where the protection of our cities and such roadsteads as are calculated for naval depots, and where large fleets can rendezvous, be sheltered, and ride in safety at their anchors at all seasons of the year.

It can hardly be supposed that any nation would be so reckless as to attempt an invasion of our Atlantic coast at the present day; but a large and powerful fleet could approach within gun-shot and batter down our cities if they were not prepared with fortifications in all respects adequate for their protection and defence.

These fortifications should be so located as to command the channel way; and at the inner extremity of every reach there should be a battery erected, if practicable, so as to commence a raking fire upon an enemy the moment he approached within the range of its guns.

The guns for the batteries should be of the largest calibre and of the greatest range, as the effect of the shot would be more destructive and the enemy sooner reached.

There has been no improvement in projectiles; nor can the application of steam to ships-of-war do away the necessity of building permanent fortifications at the points before enumerated; but, as a modification, I would respectfully suggest that steam propellers of sufficient power to attain a speed of ten or twelve miles per hour be constructed as auxiliaries to the permanent fortifications, and for the additional protection and security of our cities and harbors.

These steamers should be of peculiar construction and equipment, and one or more, as may be deemed expedient, should be stationed at each of the permanent fortifications.

Ships are at all times liable to accidents from various causes; and more especially so are steamers, as they are subject to the same injuries that other vessels are from storms and other disasters of the sea, with the additional ones of fire, explosion, &c.; and when in commission their expenses are fourfold greater than sailing ships. I propose, therefore, that machinery for as many of those ships as may be deemed expedient be constructed, put together, *tried*, and

then taken apart, and when carefully packed, stowed in suitable storehouses and kept ready for use; and that the materials for the hulls of these steamers be procured, and the timber properly stowed in well ventilated sheds

The steamers should be built of *logs*, their length not less than two hundred and fifty feet, with sufficient breadth to admit of batteries across at each end of six ten-inch guns, and three mortar beds between the batteries. Their bottoms should not be perfectly flat, but formed with a slight ellipse, the bilge rounded, and their extremities handsomely tapered, so as to enable them to pass easily through the water.

These steamers are intended to be shot-proof, as it is designed to have iron plates one inch and a half thick and six inches wide let into their sides from stem to stern, and about two and a half inches apart, this to be extended from gunwale to two feet below deep load line; and when it is remembered that they are to fight end on, and built of long easy lines from stem to stern, the conclusion is irresistible that a shot touching those plates will most assuredly glance off.

In all works intended for public defence, as a system, two strong points should always be borne in mind, viz: simplicity and economy; and as these vessels are to be of the simplest mode of structure, and built of the cheapest material, while at the same time it is as durable as any other, (white pine,) and the construction of them so simple, that carpenters, joiners, and, in fact, all who can use the broad-axe and adze, can be profitably employed in their construction when they are needed.

Another peculiarity in these vessels is to have their sterns perpendicular, of great thickness, and an iron cut-water firmly attached thereto, and in a width of two and a half feet, bearded off to half its thickness at the stern, so that when in action, and the enemy at hand with his broadside presented, the steamer, with her greatest momentum, is to drive directly into him; and it cannot be doubted that this operation once performed would require no repetition, as nothing heretofore built in the shape of a ship could withstand the concussion.

The mortar beds are intended to be used in the event of an enemy's obtaining a landing at a point where he could be sheltered from the operation of battery guns, but accessible to shells from mortars; and as these steamers will be of light draught of water, they will be enabled to approach the shore much nearer than other vessels of equal size if differently constructed.

It has long been my opinion that steamers are more to be feared from the power they possess of running into an enemy than from any other cause, either from their great weight of metal and consequent extended range, the choice which they are enabled to make of position, or any other superiority claimed for them, for in all these respects ships-of-war can be built to equal them; but if constructed as here described, and properly managed, they are not to be resisted.

With one more remark I will close my response to the first branch of your inquiry.

The telegraph, in the event of war, will keep them constantly informed at headquarters of the movements of our enemy's fleet on our Atlantic coast, and the old ruse of making a demonstration at one point for the purpose of effecting a landing at another, can no longer be practiced with the usual success, as their movements will be anticipated, and the necessary preparations made to receive them. This great invention offers an additional argument for the discontinuance of intermediate fortifications.

In reference to our possessions on the Pacific, a little deviation from the course recommended to be observed on this side would be advisable. There it will be necessary to construct the permanent fortifications, so as to enable them to stand a siege, as invasion in that remote quarter is probable, in the event of war with a strong maritime power; but in all other respects the course to be pursued

should be the same as on this side, as it is to be presumed that the telegraph will soon be extended there, and in the course of time railroads also.

To the second, viz: "What reliance could be placed on vessels-of-war, or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?"

The indispensable, and, in fact, imperative necessity of having *strong* permanent fortifications at the points before referred to, is a settled and decided conviction of my mind; they will admit of no substitute.

Steam batteries, such as have been recommended in my reply to your first interrogatory as a modification, would unquestionably prove an important and powerful auxiliary, and in all probability would, in the day of battle, if properly managed, be the more destructive of the two; but, like all ships, the materials of which they must necessarily be constructed are perishable; and possibly, at the moment their services are most required, a broken shaft, or some other of the numerous accidents to which all such ships are liable, would render them unavailable, if not altogether useless; and hence the risk a nation would encounter in adopting any substitute for permanent fortifications when there existed a possibility of its failure.

Third. "Is it necessary or expedient to continue the system of fortifications on the shores of the northern lakes?"

To this, your last inquiry, I would state, that the unprecedented change which the entire shores of our northern lakes has undergone since the termination of the late war with Great Britain renders it very improbable that invasion will ever take place from the opposite shore. Certain destruction would await an enemy who attempted it. Then the population was comparatively sparse; now cities and villages are to be seen in every direction, occupying places which were then an uninterrupted wilderness, and hosts of stout hearts ready to do battle, if needed; besides the numerous and increasing facilities for building ships and for transporting munitions of war forbid the idea that the northern lakes will ever again constitute an arena for naval combats.

In the event of another war with Great Britain we would be able to build and equip five ships to her one; this fact alone affords a conclusive reason why the government should run to no unnecessary expense in its preparations for war in that quarter.

Our tonnage will, as it is now, always be greater in the lakes than that of Great Britain, which must secure to us the supremacy in the event of war. As many of those vessels, steamers and others, could be converted into cruisers, which would not only protect our shores from invasion, but push the war into the enemy's country.

Ports selected for naval depots should have heavy guns ready for their protection; and parks of artillery, composed of heavy ordnance, should be kept in readiness at the different military posts for immediate use or transportation. Further than this, I think the government is not called upon to provide for defence.

In conclusion, I beg leave to state that if there should be another war with one of the strong maritime nations of Europe, the trial of strength *must be upon the ocean*, and it behooves the United States to be well upon their guard. As to the opinion which is rife among us, that steam alone can constitute an efficient navy, and that the nation who can command the greatest number of steamers is to hold supremacy on the ocean, I regard as one of those visionary speculations based entirely upon the opinions of mere theorists. Their efficiency for towing ships into position, and for transporting munitions of war, I admit.

If we had ten ships of two hundred and forty feet in length, with a proportionable breadth of beam, and built to carry their metal upon two decks, instead of four, and their batteries throughout to be of ten-inch guns, I believe it would take the combined steam navy of Great Britain to cope with them.

Two years' war, with a large steam navy to support and keep in constant

service, would bring any power in Europe to bankruptcy; and I trust our government will not be drawn into so unwise and expensive a system of national defence.

I have the honor to be, with great respect, your obedient servant,

R. B. CUNNINGHAM,

Commander U. S. Navy.

• Hon. C. M. CONRAD,

Secretary of War, Washington.

No. 4.

Report of Commander S. F. Dupont.

Report on the national defence, in reply to the following questions, submitted by the Department of War.

First. "To what extent, if any, ought the present system of fortifications, for the protection of our seaboard, to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?"

Second. "What reliance could be placed in vessels-of-war, or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?"

Third. "Is it necessary or expedient to continue the system of fortifications on the shores of northern lakes?"

Whether treated distinctively or generally, these inquiries may be supposed to amount to this: Shall we expend as much as we have hitherto done for defence upon fortifications? and how have these been affected by the introduction of some new elements in war, such as steam power, and enormous projectiles of an explosive character?

This subject is one which involves the honor and safety of the country; it has been critically examined by distinguished military men and eminent statesmen, and I do not venture to think that I can throw much new light upon it. In such an investigation one's profession and *esprit du corps* would naturally lead in any scheme, for the general defence, to bring the navy prominently forward. But this question is too broad and national to be viewed from any such narrow limits, and in examining it an officer should discard from his mind to which arm of the public service he belongs. In my apprehension, however, the most extended system of fortifications for the defence of our seaboard will still leave enough for the navy to do; a navy, too, carried far beyond its present number and strength. Indeed, this arm can only fill its special mission in war, that of *aggression*, by being enabled to leave the great seaports and exposed points of our maritime frontier to a more certain and more economical system of protection, in order to carry the "sword of the state" upon the broad ocean, sweep from it the enemy's commerce, capture or scatter the vessels-of-war protecting it, cover and convoy our own to its destined havens, and be ready to meet hostile fleets; in other words, to contend for the mastery of the seas where alone it can be obtained, on the sea itself.

Yet it is not to be denied that theories have sprung up, assigning much less importance than formerly to fortifications, in a system of national defence, under the influence of opinions which doubtless have some truth in them, but which are liable to be carried to a dangerous extent. Various reasons might be assigned for this change of opinion—speculation, supposed economy, a mistaken desire to

advance the interests of the navy, in short, the characteristic pursuit of theories into the field of extravagance.

But it may be still more probable that these views mainly spring from some misconception as to the extent proposed for a system of permanent defences. Some would seem to believe that our seaboard and lake frontier were to be bound by a Chinese wall, and that all the salient points on the coasts were to be crowned by castles, the cross-fires of which would cover the intervening space; in other words, that the system of fortifications proposed to protect some four thousand miles of sea-coast from the possibility of invasion or attack. But is there any cause to apprehend such extreme views? And if they should exist, is that a sufficient reason for rejecting a wise and practical system of permanent defences vitally essential to the safety of important points, and so clearly within the means of the country to provide?

In treating this branch of the subject, can we do better than examine the objections presented and the modification proposed, from sources entitled to the gravest consideration?

Holding the first position among these is the report of a distinguished statesman, then occupying the Department of War, and still holding a prominent place in the public councils—a gentleman, too, familiar with arms in early life, and one of the defenders of his country in the war of 1812. His views, set forth with great ability, received the indorsement of another distinguished personage. President Jackson, and were submitted to the national legislature in the year 1836.—(Doc. No. 243, 24th Congress, Gen. Cass's report.)

Now, it is submitted that there has been an equal misconception as to the scope and tendency of this able report, as with the views considered extreme, on the other side. In the one, modifications recommended in reference to special features have been considered as objections to the whole system; in the other, an extended scale of defence, because we had an extended frontier, was looked upon as a desire to cover the whole surface of the land with forts and field works, and to rely upon these alone for defence. Whereas the only difference related to the character and extent of the works to be constructed, based upon the consideration that there was scarcely a possibility of these works being called upon to repel attacks by *land*, as well as by water, and repeating the hypothesis that an enemy will ever attempt to make a more or less permanent establishment in the country. Such an establishment as would induce him to make a formal investment of some of these first class works, requiring a large army with its battering trains and other preparations for siege. Views on these points are presented in full, and with great force, yet the objections are strictly confined to what is conceived to be the unnecessary magnitude of some of these works, but not to the system of permanent defences, for the distinguished author of the report tells us with equal explicitness:

"I consider the duty of the government to afford adequate protection of the sea-coast a subject of paramount obligation, and I believe we are called upon by every consideration of policy to push the necessary arrangements as rapidly as the circumstances of the country and the proper execution of the works will allow. I think every town large enough to tempt the cupidity of an enemy should be defended by works, fixed or floating, suited to its local position, and sufficiently extensive to resist such attempts as would probably be made against it. There will, of course, after laying down such a general rule, be much latitude of discretion as to its application. Upon this branch of the subject I would give to the opinion of the engineer officers almost controlling weight, after proper limitations are established." * * * * *

"All the defences should be projected upon a scale proportionate to the importance of the place, and should be calculated to resist *any naval attack* and any sudden assault that a body of land troops might make upon it." * * *

"It is to be observed that the great object of our fortifications is to exclude a naval force from our harbors ; this end they ought fully to answer."

In truth, it cannot be questioned that our principal seaports, naval depots, and all important points on our seaboard, should receive commensurate protection; neither should there be, in our judgment, a question as to the mode in which this protection should be given. It would seem unnecessary to set forth the advantages for such purposes of fixed defences or fortifications. These advantages have been shown over and over again by our distinguished engineers, and never controverted. To run over some of these once more, it may be said of forts that they are the only permanent defences, and the most economical, for, with the present science in construction and choice of material, the outlay is there once for all, for the repairs are next to nothing. Forts offer means by which a small force is enabled to resist a large one ; a small number of men a large army. In the event of an attack by a competent power upon a place liable to be put under contribution, the injury might be accomplished before sufficient means of resistance could be assembled. Forts can be made impregnable against any naval force that could be brought against them, and are needed for the protection of our own fleets while preparing for hostilities on the ocean. They are secure depots for munitions of war, and render defence certain and easy, and above all, a defence which rarely involves loss of life, leaving the ordinary state of society undisturbed. No alarms are created ; no calling of men from their ordinary business. In short, by rendering success impossible, they derive immunity from attack.

It is impossible to view with favor the substitution of floating or steam batteries for permanent defences, the preparation of which will be ever deferred, on account of their perishable nature, until danger is pending ; and if ready in time, their value ceases with the occasion which called them forth, for their decay is certain and speedy. Their unsuitableness and want of adaptation to the alterations constantly made in the means and implements of war are also elements of insecurity in these wood and iron defences for harbors. There can never be any certainty that some recent discovery has not lessened our effective force, without any remissness on our part ; there can be no certainty that we may not be suddenly called on to renew our expenditures before our last appropriations have been spent. For example, a well-known, and scientific, and practical gentleman obtained the contract, under a law of Congress, to construct for harbor defence an iron floating battery, which was to be shot and shell proof—in fact, invulnerable in every respect. A target, constructed after the manner he proposed for the sides of his battery, was subjected to the test of one of Commodore Stockton's large guns. It presented little or no resistance ; the ball passed through without difficulty, tearing out large fragments formed of seven thicknesses of boiler-iron, well bolted and rivetted together. There is no desire, however, to be understood as excluding altogether these costly and unwieldy machines ; they may serve as important auxiliaries to forts, in broad sheets of water, or special localities not within the range of the fixed work ; though, in all probability, in most cases the hulls of stout merchant ships, strengthened and prepared for mounting one or more pieces of heavy ordnance, would be sooner got ready and answer an equally good purpose. But to leave the whole defence of our harbors to such temporary expedients, built of materials as vulnerable and perishable as ships, would be expending enormous sums in order to invite attack.

Throughout this report I was at first disposed to take for granted that no idea could prevail in this country, to any extent at least, that would desire to retain the *navy proper*—by which is meant efficient steam and sailing ships-of-war—within the harbors, for harbor defence ; but it seems to be included in the scope of one of the inquiries, and cannot be overlooked.

What, then, is the first object and main purpose of a navy but the defence

and protection of our commerce? It is the only form in which that protection can be given; but this is essentially taken away when it has assigned to it the defence of our seaports. It may be said that the navy will be increased to such a size as to be able to perform this double duty. There is nothing in our past history to authorize such a belief; and in time of peace the people of the United States will never support such a naval force. They object to spending much money on the *personnel* of military establishments. Nor does it belong to their temper, or their position among nations, to indulge in apprehensions of war; their time is too much occupied with the noble arts and pursuits of peace to feel such an interest in this subject as must be felt to bring them to such large expenditures upon perishable materials.

If our country had to rely upon naval defences, it may well be questioned whether any portion of the navy would be suffered to leave our coasts for the protection and preservation of our foreign commerce, while we were under the alarm of war. However great the naval force might be, it would not be thought sufficient. The dangers nearest home would command our interest and sympathy; the preservation of our great emporiums of commerce from sudden devastation would cause the single trading ships upon the ocean to be forgotten. And how would a naval force, for home defence, be partitioned out to the different cities and stations, without endless vexation, dissatisfaction, and dispute?

To employ our active navy, in whole or in part, to the entire or partial abandonment of our system of fortifications, would be to supplant impregnable bulwarks by pregnable ones—a fixed security by a changeable one—placing perishable materials in lieu of those that are durable; it would be exposing ourselves to the chance of being suddenly left, for a time, without defence, through new discoveries in the art of war; it would be opening the way to expenditures of money which no estimate could count the sums; it would be depriving our commerce of its legitimate protection, and would be resigning our sense of security, peace of mind, and continuance in our pursuits without interruption, in the event of war. But there are objections to such a plan still more fatal: it involves the sacrifice of the lives of our fellow-citizens, and proposes to make their bodies, since they are brave and willing, the walls of defence for the enemy to fire at, instead of stone or mortar; it is compelling the conclusions of science to give way to mere speculations, and rejecting the experience of the world. Nor is this all that is involved in so destructive a proposition: it would divert the navy from its highest duty; deprive it of its chief honor and merit, and best claim to the respect and support of the people, that is, the vindication of the national honor, and the maintenance of the national freedom and independence upon the high seas. Again, if naval defences are relied on, they will either be manned or not. If manned, what shall we say of the effects of such a life upon men and officers?—would it not be destructive of all those characteristics of skill, daring, and endurance which give to the seaman his power and prestige upon the ocean? If not manned, then, compared to forts, they are what wooden docks are to stone docks. In either case, more men will be required to keep them in repair than forts.

On the question of economy, let us further consider the cost that would be entailed upon the nation, by the alarm of an invasion or the appearance of a hostile fleet on the coast.

The sudden equipment and preparation of an army, and its maintenance sufficiently long to remove all apprehension, would cost more, at every principal seaport, on one single occasion, than all the forts. Then what would be the first thing that an army would do, belched forth by the tens of thousands from every railroad station and terminus, but to set to work and throw up the best fortifications they could in the emergency? Would not every musket be grounded to take up picks and shovels? Again: shall we dwell upon the state of the public

mind, in one of our chief cities if its approaches were left without forts, equipped and manned?

Is there any exaggeration in the picture of an enemy's fleet of some thirty steamers watching an opportunity, and through the ever recurring vicissitudes on the ocean, familiar to professional men, eluding a naval force of our own, which it would not have been willing to encounter, running up New York harbor, anchoring from the North to the East river, in a semicircle round the battery, hurling destruction with its new and gigantic projectiles, setting fire to the forests of shipping, and burning the navy yard; and retreating the moment the temporary and hurried defences began to tell against them, destroying more property in a few hours than would cover the shores of Raritan bay, the Narrows, and the islands of the Sound, with fortifications? Now, this is the kind of warfare we must look to, and that we must carry on ourselves.

The greater the injury we can inflict, the more rapidly this injury is repeated, and the sooner we will obtain redress and bring an unnatural condition of affairs to a close. The position of Halifax, Bermuda, and the West Indies, must ever be borne in mind, where fleets may wait for a fitting opportunity for incursions; to suppose that there are to be no such thing as surprises, because railroads have been invented and hollow shot cast, seems to be taking for granted that human life has changed. Indeed, those who indulge in such theoretical securities are preparing for themselves surprises, perilous ones too.

Steam will be the great agent in giving to the new elements of destruction powers of ubiquity. Wherever there is a vulnerable spot, there we must dash, and there an active enemy will dash at us. But it must be remembered that so far as the improvements in projectiles, specially referred to in the inquiries under consideration, are concerned, these have, relatively to ships, *strengthened forts*. Hollow shot crumble into fragments and fall harmless when directed against stone walls. At the siege of Antwerp, under Marshal Girard, they were thrown from heavy mortars without effect, and experiments at home have further established the fact. It takes solid shot to batter walls and make breaches—plenty of them, and rapidly discharged, and concentrated upon or near one spot.

On the other hand, we have only to imagine a few eight and ten-inch shells passing through the side of a line-of-battle ship into the main or lower gun-deck, and there exploding amidst the dense crowd at the batteries, every fragment multiplying itself in countless splinters of wood and iron as destructive as itself, and if it should fail to burst, still doing all the injury a solid shot could do. Or, let one enter on the orlop deck among the passers of powder; or, lower still, striking at the water line, tearing out large irregular fragments, and leaving openings defying all shot-plugs. Change the scene to a steamer, with all the circumstances above mentioned of pervious sides and crowded decks, and conceive a few exploding in the engine room: for truly has it been said that, compared to a sailing ship, a steamer has twenty mortal parts to one! No! when it comes to using hollow shot a ship will prefer engaging something similarly constructed. No ship or ships can lay under a fort at this day; no American fort, at least, with its furnaces for hot shot in addition to these murderous shells.

In this connexion it may be well to make a passing allusion to the past successes of ships-of-war against forts.

They are certainly striking examples of naval prowess, and should always cause a thrill of professional pride in the breast of every seaman, let his flag be what it may; and they should be remembered and studied by officers to incite to deeds of daring, to self reliance, and to faith in that "fortune which favors the brave." But there is no foundation for the theory attempted to be raised upon these successes. The attack on Algiers by Lord Exmouth, commanding

the combined English and Dutch fleets, take it all in all, is probably the greatest naval achievement in this line.

About two hundred guns could be brought to bear against about one thousand in the fleet, and the *fire* of the admiral's ship, the Queen Charlotte, is considered generally by the profession to be equal to any on record; but she was permitted to come in close to the mole, take up her position, swing round her broadside, and make fast to an adjoining vessel, before a shot was fired upon her. This fact alone gives an idea how the defence was conducted; the batteries were defective and unskilfully served, yet the ships hauled off, and the batteries were not silenced, though redress was obtained. Indeed, it is admitted by Lord Exmouth that he could not have continued the contest.

Nearer the present day the capture of Acre is equally celebrated, and is interesting, as the new elements in war, steam power and hollow projectiles, were brought to bear.

The highest military authority in England expressed the opinion in Parliament that this was one of the greatest achievements of modern times; but the same authority added it was also connected with peculiar circumstances which they could not always hope to occur, and warned their lordships that they must not always expect that ships, however well commanded, or however gallant their seamen might be, were capable of commonly engaging successfully with stone walls.

The works in question were in a bad condition and were undergoing repairs. Their position permitted an approach through a channel where only a few guns could be brought to bear against the fleet, most of which took this passage. But few of the guns of the fort were heavy or effective, and only one battery of five guns well served. About five hundred guns were brought to bear on the fort; the walls were not breached, but a large magazine blew up, and, producing a panic, the fort surrendered, which, it must be remembered, was besieged by land also.

We have merely alluded to these two justly celebrated attacks of ships against forts to invite an examination into their details, and into the circumstances of other similar achievements nearly as striking, with the conviction that few persons could be found who would use these instances of success as an argument against the necessity of permanent defences. Surely we cannot measure what has been done in this way, when the preparations for defence and the resistance were conducted by those whose bravery, as in the cases cited, was left unaided by skill or science. Neither let it be supposed, where ships have attacked forts, the results have always been the same; far from it; and it is only necessary to allude to the affairs of Fort Moultrie, and, later, to Mobile Point, Stonington, Fort McHenry, &c., from our own national experience.

Are we entirely to reject, in this question, the experience and practice of the great European powers, England and France? The former, with her gigantic navy, according to the modern hypothesis, would seem to require no permanent defences; nor the latter, with her increasing marine, already brought to a very formidable condition in numbers, materiel, and discipline.

Yet these two nations, while building without ceasing war steamers, are continually adding to the fixed defences of their seaboard, and this, too, with a view of making their navies more efficient in their share of the national defence. France, in consideration of the change likely to occur from the new elements in war now under consideration, has had recently her sea-coast re-examined by a high commission, representing all arms in her stupendous military organization; and the result was to order still further protection to numerous points on her seaboard, rendered accessible by light draught steamers mounting heavy ordnance, their forts to be garrisoned in time of need by the local militia. (*garde nationale*.) In England the call is for greater activity in material and permanent means of defence, particularly in the case of refuge harbors, such as Portland

and Dover, while the fortifications of her great arsenals have all recently been strengthened.

After mature examination, I am of the opinion that in a system of national defence forts cannot be dispensed with without entailing enormous expenditures for uncertain results. The invention of cannon and their constant improvements have changed the form of fortifications, and added to the size, durability, and massiveness of their construction. Now the invention of cannon was a greater change in the art of war than any that has occurred in this century, and with regard to one of the principal improvements of the day in destructive agents—*explosive shot*—the advantage has been given decidedly to forts.

On the other hand, if we cannot dispense with forts, can they not be modified? Is there no middle course? Fortifications in military science are regarded as a temporary means of resistance, by which an enemy is kept in check until relief is afforded.

In this view of their functions it seems probable that as, on the one hand, they might be more effectually assailed by steamers-of-war towing in heavy ships, both ships and steamers mounting the heavy ordnance which has been introduced, throwing *solid* as well as hollow shot, so, on the other hand, relief being more easily procured, their style of construction might be more economical. But this is a question belonging to the engineers.

It is one, however, which may be interesting just now with reference to fortifying our new coast on the Pacific—a work which surely ought not to be delayed. Here we are, as it were, building up another nation, and it must be built up with arms as well as arts; for without arms no nation was ever safe, much less great.

The position of Halifax, Bermudas, and the West Indies have been alluded to above in reference to our Atlantic and Gulf coasts. In the Pacific we have already outposts on our flanks, in the hands of first class powers. The French have a protectorate government in the Society Islands; they hold the Marquesas still nearer, with its superior harbors, and have been looking for years for some excuse for seizing the Sandwich group; for this is the only way to account for the manner in which they have ever countenanced the unjust and ungenerous demands of their agents in those islands. That they have not now possession of them is due, probably, to what has been stated of the determination of the government of the islands to hoist the American flag, and call upon the United States for protection or incorporation. It is impossible to estimate too highly the value and importance of the Sandwich Islands, whether in a commercial or military point of view. Should circumstances ever place them in our hands they would prove the most important acquisition we could make in the whole Pacific ocean—an acquisition intimately connected with our commercial and naval supremacy in those seas. Be this as it may, these islands should never be permitted to pass into the possession of any European power. Then we have British Oregon, with Vancouver's island, the Halifax of the Pacific coast; and last, though perhaps not the least, the Russian possessions of the Sitka, &c., in the north; and all these in an ocean above all others adapted to the use of steam.

The third inquiry submitted by the department is whether it be necessary or expedient to continue the system of fortifications on the shores of the northern lakes.

The first view of this branch of the subject would probably lead to the conclusion that, as we dispensed with forts during the war of 1812, we need them still less now; that the contiguity of the two frontiers will enable us to keep pace with any evidence of preparation on the other side; that our progress in population and resources, rendered so immediately available by the increase of water communication with all parts of the border States, especially with such important points as the city of Albany, which, in its turn, is connected with all sections of the country by its great river, railroads, and canals, was far greater

than any progress within the Canadas. Yet the advance there has been highly respectable, and very extensive public works, intimately connected with a system of defence, have been completed.

But this very progress on our lake frontier, showing itself in large and populous towns with a rapidly increasing commerce, all exposed to sudden assaults, naturally lead one to pause well before advancing the opinion that the general government is absolved from giving adequate protection to all exposed and important points, whether on our lake or sea-coast.

Why should not Buffalo and Oswego be protected, as well as Savannah and Mobile? Not by extensive and costly works, capable of resisting invasion or siege, but sufficiently strong not to excite the cupidity or daring spirit of an enemy, who, in a rapid incursion, might, as elsewhere, destroy an enormous amount of property before any resistance could be brought against him. To conduct a surprise may be difficult on the lakes; but we have had, within a few years, full proof that it is possible.

In case of a war with England her provinces will, in all probability, be invaded, and this invasion, according to the declaration of a distinguished citizen, will be one almost *en masse*. He predicts that an army of a hundred thousand men will march upon the heart and capital of the country, and settle all at one blow; that neither forts nor ships will be wanted; and that the rivers and lakes, instead of obstacles, would become bridges to the invaders. One cannot fail to be stirred up by this captivating picture; but in the only trial heretofore made upon Quebec the river was not found to be a bridge, and the campaign failed for want of one. Suffice it, however, to say, if we carry on war on a large scale without being governed by the art of war, by science, and past experience, we may, and doubtless will, still be successful; but this result will be obtained by an increased expenditure of blood and treasure.

While an army, however large, was marching upon a vital point, millions of property might be destroyed along the lake shores, making a heavy discount on the fruits of the victory, which might be prevented by moderate expenditures. Our large frontier towns, where great injury could be suddenly inflicted, should be protected from liability to a *coup de main* by forts of moderate dimensions, to be garrisoned, in time of need, by those whose hearths they shelter. All lake harbors, whose position, depth of water, and accessibility would render them important as refuge harbors to our own ships or to those of the enemy, should also be defended by adequate works. All materials not perishable should be gradually collected for the construction of ships and steamers. These preparations become invaluable where war threatens or comes; neither are they lost if it should not overtake us, for they may have had an important part in averting it.

In many particulars, and according to the opinion of men of the most experience, Ontario is the most important in the series of inland seas in a military point of view, and at this time the English steam tonnage upon it is greater than our own. This fact alone is one for consideration.

In connexion with the movements of large armies nothing has been said of fortifying strategic points on the line of offensive operations, because this question is a purely military one, and belongs so especially to another branch of the service that it would be mere presumption to touch upon it here.

Though not specially referred to in the questions under consideration, it may be expected that some notice will be taken of the facilities to be derived, in a system of national defence, from rapid railroad intercommunication and transportation. These certainly can confer a great and real benefit, amounting, perhaps, to positive exemption from the possibility of invasion. An army, with its baggage, can accomplish an ordinary march of twenty-five days in one day, and reach the terminus without fatigue, all ready for fight. The experiment of transporting troops in this way has already been tried in France, and, more

recently, the emperor of Russia has been amusing himself by sending his guards, with their artillery, to and fro between his capital and Moscow, with entire success. But it is a misapprehension of means and ideas to suppose that the necessity of coast defences will be done away with because we possess the power of transporting the militia from the interior to the seaboard in the briefest space conceivable. Are our farmers, mechanics, merchants, doctors, and lawyers to constitute the defence of our maritime frontier? Are they, in time of war, to sleep with their knapsacks on their backs and their muskets by their sides, and be ready at the sound of bell or steam-whistle to leave families and business to man floating batteries in or near our seaports, or sounds, or rivers? Besides, mere numbers, though they may prevent an enemy from *landing* on our shores, cannot prevent his ships approaching near enough to hurl destruction among themselves, destroy cities, and burn shipping.

But if we are to rely upon railroads as one of the modes of repelling sudden attacks, having for their object the destruction of property or the levying of contributions, it will be well to inquire as to the amount of dependence that can be placed upon them. The utility of a road may be destroyed in a few minutes by very little exertion; a single rail removed will cause delay if not a serious accident. During the last revolution in Paris troops were thus prevented from reaching the city from the departments. In time of war, for those roads at least which lie along the coasts, a system of frequent inspection may be necessary, and means of repairing injuries kept at hand.

In the first part of this report it has been stated that, however complete our system of fortifications may be made, a large sphere of action in a scheme of national defence will still devolve upon the navy. The general effect of fortifications is to exclude war from our borders, and contribute to the inestimable advantage of leaving society in an undisturbed state, pursuing its usual avocations. A navy becomes efficient just in proportion as it is relieved from harbor defence; and in a war even defensive in its origin and object the navy in almost every case must assume an offensive attitude. We lose the vantage-ground if we wait the assault of an enemy. One would suppose there could scarcely be a dissenting opinion in reference to this point; that the special function of the navy, in war, is to be aggressive. Our able engineers, and especially their present distinguished chief, in the admirable reports they have been making for years on this subject, invariably assign this high and all-important position to the navy.

General Cass tells us, "Our great battle upon the ocean is yet to be fought, and we shall gain nothing by shutting our eyes to the nature of the struggle." Similar views are held abroad as to the true sphere of a navy. The Duke of Wellington, while urging increased activity in the permanent defences of Great Britain, in the strengthening of forts, the construction of barracks, and *place d'armes* to be walled in, still considers the navy of England, through its powers of *aggression*, its most essential defence.

The extraordinary expansion of this country and its development in every department, shown especially in a commerce which, long since whitening every sea, has received a marvellous stimulant recently, by the accession of a thousand miles of coast on the Pacific, by new channels of trade, and by the modifications in the navigation laws of our great competitor, should lead all reflecting minds to consider how great would be the revulsion in our prosperity if, through any untoward event, we should lose the means of protecting this commerce. Standing now in the front rank with our great commercial rival, shall we neglect an old aphorism of Sir Walter Raleigh, most cogent still: "Whosoever commands the sea commands the trade, and whosoever commands the trade commands the riches of the world?"

Now, is our navy, in point of efficiency and numbers, what it should be? Our statesmen constantly allude to it as the right arm of the nation's power;

yet has this arm been kept in any degree of vigor commensurate with the work it may have to perform or in keeping with our position among the nations? Is it equal to the ordinary exigencies occurring almost daily? The law passed some years since limiting the number of seamen still exists. Since its passage our commerce has nearly doubled, and our squadrons are too small to give it adequate protection or to keep up a healthful spirit and experience in the naval profession. Recently the government had not at its disposal the means to prevent an unlawful aggression on the territory of a friendly power; nor was the force sufficiently respectable afterwards to infuse, by its presence alone, a little mercy into Spanish justice. But are we yet through with this question of Cuba? Are we not threatened with a foreign intervention? At any rate, does it not offer another striking instance to be added to the long list of dangers which, at different periods, have suddenly sprung upon us, and to which this day of special international amity has proved no exception? The French claims, the north-eastern boundary, the affair of the *Caroline*, the Oregon controversy, have all shaken for the time being our relations with the two most formidable powers of Europe—formidable to us only because they have powerful navies—a collision with either of which would be rather a different affair from that with our neighboring republic, with whom similar disturbances ripened into actual hostilities.

The naval power of England is greater than ever before in her history, and the disparity between us is yearly increasing, particularly in her steam navy. In the admiralty navy list for April, 1850, we find one hundred and fifty steamers of war; of course many of these are already obsolete in construction and machinery, but she is building new ones and launching numbers every year. In addition to these, especially constructed for war purposes, she has between sixty and seventy mercantile steamers, capable of being armed with thirty-two pounder cannon, for which the guns, carriages, and ammunition are *actually* prepared. She has, still further, two hundred and forty more, capable of mounting a lighter armament, and some six hundred besides, which might be of service to resist invasion from her neighbors. Exclusive of her squadrons abroad, which are large and efficient, with a due proportion of steamers to each, in January, 1851, she had in commission at home fourteen sail of the line, three of them screw steamers, ten frigates, four of them steamers, besides several steam sloops, all ready for sea. She has also ready for commissioning twenty other powerful steamers, viz: eight large frigates and twelve sloops.

The training of officers and men is in full keeping with this colossal force. Her squadron of evolutions offers the finest school for both, and the gunnery ships are making her able seamen expert artillerymen, good swordsmen, and capital shots with pistol and carbine.

The navy of France is also powerful; it has risen entirely from its almost total extinction during the long and bloody contests from 1789 to 1815. In steamers of war, at the commencement of this year, she had one line-of-battle ship of ninety guns, with screw propellers, fourteen steam frigates of first class, mounting from eight to sixteen guns of heavy ordnance; fifteen steam corvettes, and forty despatch steamers, most of them mounting from two to four shell-guns.—(See *Etat Général de la Marine et des Colonies*, for February, 1851.)

Both these navies have reached the highest state of efficiency, skill, and discipline, and their *morale* never was higher: that of England, roused to the maintenance of its boasted supremacy on the ocean; that of France, burning for an opportunity to show the world that its practical skill is *now* equal to that science and bravery which were ever conspicuous.

When completed, we shall have in our navy five steam frigates and one steam sloop. These vessels mount or will mount from six to ten guns, some of them of large calibre; they are strong, well-built, and efficient vessels, one or more of them quite equal, if not superior, to anything of the same class abroad. But this statement, compared with the two made above of the navies of England

and France, shows terrible odds against us. It is well to remember this; but it is not exhibited here with the intention of making it the basis of an argument to show that we should set to work and erect such fleets here. The temper of our people in relation to any such expenditures has already been spoken of, and there is no desire to advocate extravagant cost for contingent advantages.

But this disparity between us and other nations in our means of offence and defence, already so great, is yearly increasing. How is it to be got rid of or lessened? The reply is often made: Has it not ever been so? was it not quite as great when we went into the war of 1812? And it may well be asked how that disparity was overcome in that memorable contest. In the first place, it was lessened by the skill, courage, and coolness of our officers, united to the fine spirit, good gunnery, and high discipline of the crews. In the second place, by a process equalling the greatest piece of *strategy* ever performed on land by the greatest military captains. We built frigates which in size, calibre of guns, and in the brave hearts who took charge of them, literally struck off from the British navy list everything below a line-of-battle ship, at least so far as these frigates were concerned.

The first encounter of our frigates with theirs astounded Britain. In accounting for her defeats, it was natural for her only to have seen the disparity in *size and armament*, but the official account of these frigates shows something more, and this is now acknowledged with becoming candor by some of her distinguished men. Sir Francis Head, in a recent work, says: "Gunnery was, in naval warfare, in the extraordinary state of ignorance we have just described, when our lean children, the American people, taught us, rod in hand, *our first lesson in the art.*" Certain it is that the British admiralty board thought it necessary to put a stop to what they conceived to be a very unequal contest, and accordingly intimated confidentially to the captains of their ships that they did not conceive that any of his Majesty's *frigates* should engage single-handed the larger class of American ships, which, though they may be *called* frigates, are of a size, complement, and weight of metal much beyond that class, and more resembling line-of-battle ships.

Now, can we not once more render obsolete one-half or two-thirds of the English and French navies, and compel these powers to remodel their steam as well as sailing ships? It is the opinion of officers who have closely examined this subject, aided by actual experiments, that we have not yet reached the maximum point in the use afloat of heavy ordnance.

It is proposed to build ships that will carry guns of larger calibre and longer range than any heretofore used; to have auxiliary steam power, with the machinery out of reach of shot or shell, to be disencumbered of side-wheels, and, when not using this auxiliary power, to be fast and manageable under canvas—very much such a ship as the Princeton was, on a larger scale, and with the improvements which seven years have introduced. All candid minds will now admit that the conception and principle involved in the construction and armament of this ship was in advance of her day, for in casting round we have found nothing combining so many requisites for a steamer of war.

The advantage of guns with long ranges is feelingly dwelt upon by Sir Francis Head, already quoted. Speaking of the American navy in the last war, he says: "They not only converted their seamen into practiced gunners and expert artillerymen, but, by substituting long guns instead of our short ones, they secured for themselves the immense advantage of being able, without loss or danger, *luxuriously to pummel* us to death, at ranges at which they had precalculated they would be completely out of our reach."

It would seem unnecessary to mention that all improvements in the implements of war, the moment they are proved effective, will, of course, be seized upon by other powers, for concealment in these matters is no longer attempted. But the great point to be gained is to compel these powers, as it were, to

start, *de novo*, with us, and to render comparatively valueless their gigantic naval establishments. In the building of a steam navy we have scarcely commenced, and it is rather mortifying to think that even Spain has as many steamers of war as we have. Candor compels the admission, however, that circumstances have greatly favored us, and though this extreme economy or indifference might have cost us dear, certain it is that many millions of dollars have been saved by the delay. England and France have been going through the usual costly process in such matters before reaching a measure of excellence—one improvement almost immediately laid aside for another, and this one as rapidly giving way to something still better; while all this time we have been dealing most sparingly with this very expensive agent, steam power. But now that a great degree of perfection has been reached in its application, that the science and mechanical skill of the country are at so high a point, that our wealth and resources have so increased, shall we continue to refuse a *reasonable* measure of preparation for future exigencies?

Allusion has been made to the assistance England is prepared to receive from her mercantile steam vessels; and it may be said we have the same resources, so far as they go, of falling back upon our splendid mail steamers. These vessels would doubtless prove serviceable in many ways; they may carry a few guns of very respectable, though not of the largest calibre; built for speed, they would be admirable despatch vessels, serve to reconnoitre with safety the movements of an enemy, give warning of his approach, and the amount of his force—in short, be what Nelson termed his frigates, “the eyes of the fleet.” But these steamers cannot form the *basis* of a steam navy; such an idea would be fatal to our naval efficiency. It is not intended by this to object to government’s giving adequate protection to these mail steamers, in order to carry out the international postal arrangements. But they are not such steamers as the government would now build for war purposes; the side-wheel may be said to be almost obsolete, and their machinery is altogether too much exposed to shot and shell; ships so costly must, at least, be made less vulnerable. But if the mail steamers are to be depended upon, as our steam navy, and not as auxiliaries to it, as the English and French mercantile steamers are to their navies, then another question presents itself. At what stage of an impending emergency is the government, in conformity with the right granted in the contract, to take these steamers?

If this be deferred until a late moment, there may be no time to fit them for war service, for very material alterations will have to be made. If further deferred, until hostilities break out, they certainly will not be ready for the first brush, and half of them may be picked up abroad by the smallest armed cruiser. Should they be taken by the government prematurely, their business and profit are broken up, and pass into the hands of their rivals, who may run their steamers to the last moment consistent with safety; for by the other powers, as stated above, they are only held as auxiliaries.

A few alarms, then, leading to no rupture, may saddle the government with a class of steamers not fit for the navy proper, to be disposed of at an enormous loss; for the alterations which will have been made to convert them into “men-of-war” will have wholly unfitted them for their peaceful pursuits; just as much so as the exorbitant expenditure for the luxurious accommodation of passengers is wholly unnecessary for a steam frigate. In truth, in the transfer of these mail steamers this item may be so great that it should not be altogether overlooked. It has been stated that the saloons, cabins, and decorations of one of these lines have cost from one hundred thousand to one hundred and twenty thousand dollars per ship, which, of course, must be paid for, though not one dollar of it would be required for naval use. Two iron hooks to swing his hammock, make the birth of the seaman, and a few pine boards compose the bunk of the officers.

In conclusion, whatever may be decided in relation to the national defence by

fortification, whether these be continued, extended, or modified, I beg leave to express an emphatic dissent from all theories having for their object the substitution of active ships-of-war for permanent works. This would be placing the navy in a false position before the country; giving it duties to perform for which its organization is inapplicable; preparing for its future discredit and loss, through failures to execute that which should never have been undertaken, which is not embraced in the general scope and design of a naval establishment.

To retain the navy for harbor defence was entertained at the commencement of the last war with England; the proposition to do so sprung from the apprehension that it could not compete with the vastly superior English forces upon the ocean. But at that time some brave and sagacious officers in the high ranks saved the navy from the fate that threatened it, and to these gentlemen it owes all its subsequent honors, usefulness, and prosperity. If any such ideas prevail, at this day, in or out of the profession, those holding them would do well to pause and consider what the navy would have lost, and what the country would have lost, if our ships-of-war had at that eventful period been deprived of the opportunity of filling so bright a page in the nation's history by their achievements upon the ocean. In this connexion an eloquent passage in the speech of a great statesman is recalled, delivered in the Senate of the United States in 1838. After alluding to our being at war with England, at a moment when she had gained an ascendancy on the seas over the whole combined powers of Europe, and quoting the familiar verse of her poet,

" Her march is o'er the mountain wave,
Her home is on the deep."

Mr. Webster says: "Now, sir, since we were at war with her I was for intercepting this march; I was for calling upon her, and paying our respects to her at home; I was for giving her to know that we, too, had a right of way over the seas, and that our officers and our sailors were not entire strangers on the bosom of the deep; *I was for doing something more with our navy than to keep it on our shores for the protection of our own coasts and our own harbors*; I was for giving play to its gallant and burning spirit; for allowing it to go forth upon the seas, and to encounter on an open and an equal field whatever the proudest or the bravest of the enemy could bring against it. I knew the character of its officers and the spirit of its seamen, and I knew that in their hands, though the flag of the country might go down to the bottom, while they went with it, yet that it could never be dishonored or disgraced.

"Since she was our enemy, and a most powerful enemy, I was for touching her, if we could, in the very apple of her eye; for reaching the highest feather in her cap; for clutching at the very highest jewel in her crown." * * * *
"The ocean, therefore, was the proper theatre for deciding this controversy with our enemy; and on that theatre my ardent wish was that our own power should be concentrated to the utmost."

It would be ill suited, indeed, to the spirit of this nation to retain its naval forces in its own waters during a war, especially if that war was with a naval power. Steam, this new element in the affairs of the world, has very materially changed our position with reference to other nations. Our distance from Europe, measured in time, is now reduced to a brief period of ten days. These United States have hitherto been advancing the general cause of human liberty by an active and progressive peace; but do not events abroad more and more indicate that we may, at no distant day, be forced into our own defence—to aid this cause of freedom by an active war?

Respectfully submitted.

S. F. DUPONT,
Commander United States Navy

No. 5.

Report of Lieutenant J. Lanman.

NEW YORK NAVY YARD, September 20, 1851.

SIR: In obedience to the within order of the honorable the Secretary of the Navy, I have the honor to submit the following, as the result of my best reflections upon the subject referred to in your communication of the 17th June last, addressed to the honorable the Secretary of the Navy:

1st. "To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?"

The great change produced upon all maritime nations by the application of steam must, of course, have a most important bearing in regard to the system of our national defences, as adopted in the year 1816, and that system most applicable to the same purpose at the present day.

I desire to say that should a foreign power design hostilities against the United States, their steamers, with transport ships in tow, would not attempt to pass our fortifications, but could land thousands of troops upon our shores at the numerous points convenient for so doing, and free from the annoyance of any battery.

At the same time, I conceive it all important that our seaports should be protected; yet the great improvements made in projectiles, and the advancement in the science of gunnery would suggest that our fortifications need not be so extensive, and consequently erected at much less expense. Though I would not demolish any of the works now completed, yet those being erected could be so modified as to receive the heavy armament of the present day, and be finished at much less expense than by carrying out the designs of fortifications planned many years since and not yet completed.

2d. "What reliance could be placed on vessels-of-war, or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?"

In reply I would say that great reliance could be placed on war steamers of moderate draught of water, armed with our efficient eight and ten-inch columbiads, as they should at all times be in readiness to take in tow any armed vessels at the naval station, and in a few hours from port could oppose the landing of the enemy upon any part of the adjacent coast.

Sailing vessels of the commercial marine and river steamers, (suitable for the purpose,) would be available means of transporting troops to oppose the landing upon our shores of any hostile force.

Floating batteries and gunboats, and other temporary substitutes for permanent fortifications, I conceive to be heavy expenditures of the public treasury and not of the least possible benefit to the government. Of course I would except such temporary means of defence as a case of emergency might demand, when the people of our country are ever ready to look out for themselves.

3d. "Is it necessary or expedient to continue the system of fortifications on the shores of the northern lakes?"

The same answer will apply to those works that I have made in regard to the fortifications on our seaboard. Those unfinished should be modernized, and

those in service armed with projectiles and otherwise adapted to the improvements of the year 1851.

I have the honor to be, sir, your obedient servant,

JOSEPH LANMAN,
Lieutenant United States Navy.

Hon. C. M. CONRAD,
Secretary of War.

No. 6.

Report of Lieutenant M. F. Maury.

NATIONAL OBSERVATORY, Washington, August, 1851.

SIR: I have received a communication from the Secretary of the Navy, covering the copy of a letter from yourself of June 17, 1851, requesting him to communicate certain resolutions of Congress concerning land defences and fortifications to several officers of the navy, and "to obtain their separate opinions in writing" upon the following points, viz:

1st. "To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?"

2d. "What reliance could be placed on vessels-of-war, or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?"

3d. "Is it necessary or expedient to continue the system of fortifications on the northern lakes?"

The resolutions are:

"1st. *Resolved*, That the Secretary of War be directed to report to this House, the second Monday in December next, on the subject of the land defences of the country, in which he will review the general system adopted after the war with Great Britain, and since pursued in regard to the permanent fortifications then deemed necessary for the national defence; and that he report whether the general plan may not now be essentially modified by reducing the number of works proposed to be erected, and by abandoning some of the forts now in progress of construction."

"2d. *Resolved*, That the Secretary of War also report the number of fortifications which have been built, including those nearly completed under the general system, the number in progress of construction, and the number not yet commenced, but proposed to be erected, and in such form as will conveniently show the States and Territories in which the several forts are situated or to be located, when the work was commenced, when completed or expected to be finished, the number and calibre of the guns mounted or to be mounted, the estimated cost, the amount expended, and the sums yet required to finish or construct, as the case may be, each work."

I am directed by the Secretary of the Navy to give this subject my "best reflections, and to communicate the result to the Secretary of War."

To make clear the result of my reflections upon this subject it is first necessary to pass, at least briefly, in review the condition of the country immediately preceding the year 1816, when the present system of fortifications was adopted, and to contrast the condition and military resources of the United States then, with their condition and military resources now.

In 1816 our population was eight millions; we had just come out of a trying and expensive war with the most powerful nation in the world; our soil had been invaded, the Capitol burned, towns had been besieged, villages laid waste, and the people greatly harassed by the presence among them of an insolent foe.

The application of steam as a motive power, even to river craft, was but an experiment, and men had not yet waked from their dream in which they first saw upon the ocean visions of steam navigation. Railroads had not then begun to thread themselves over the country, nor had the first telegraphic wire streaked the horizon. The country had been and might again be invaded; the alarm could be spread only at the rate of one hundred miles a day; and to repel the enemy our generals could bring up their forces only at the rate of what, in this day of steam and railroad car, would be considered as a snail's pace; twenty miles was a good day's march for an army.

Under these circumstances, with the horrors of war and the dread of invasion fresh in the minds of the people, it was natural that the attention of the government should be directed to a system of defence along our borders which, in another war, should make the weak points strong, the salient impregnable, and the exposed, the rich, and the tempting secure; thus rendering the country in another war safe from invasion. Accordingly, the plan was to line the seaboard with forts and castles, which should oppose the advances of the enemy, beat him back, resist sieges, and support garrisons for defence, until reinforcements should arrive or the patience and the energies of the assailants should become exhausted. Under these circumstances the present system of fortifications was commenced.

For defending the approaches to any particular part of the coast, the engineer, in planning his works, had to take into account the importance to us of the place to be defended; the importance which the enemy would probably attach to its occupation by himself; and the force that he would or could, probably, bring against it. Also, an element which entered largely into the engineer's plans was the kind of force, the calibre of guns, &c., that his fort would have to withstand.

But since that time great changes have taken place. The relative importance of ports and harbors, and places to be defended along the coast, has greatly changed. The implements of warfare and the means of attack and defence have changed; structures that were well calculated to resist the batteries of the best appointed ships in 1816, would now tumble down before the appliances of modern warfare. The improvements which have since taken place in ships, their armaments and locomotion, are vast; and therefore works may be found along our coast which, though sufficient in their day, would now be wholly inadequate to the purpose for which they were intended.

At best, a fort can actually defend so much of the coast only as lies within the range of its guns; outside of this range an enemy may disembark an army, land his heavy ordnance in the very sight of the strongest castle, as we ourselves have since done at Vera Cruz, and proceed to invest, from the rear, the strongholds of the country. It was therefore practicable for a bold and dashing enemy, notwithstanding the powerful and costly works at Old Point Comfort, in Virginia, to land in sight of these works an army, in Lynn Haven bay, march up to Norfolk without coming in reach of the protecting battery, and invest the city and the navy yard—the very places the guns of these forts were intended to protect.

True, it was practicable to erect works of defence at Lynn Haven bay; but being erected, the sagacity of our engineers perceived there were still other places and times at which an enemy might land and march up to Norfolk without once coming in range of the Lynn Haven guns. The country saw this, and perceived that effectually to prevent an enemy of naval resources from landing on our coast in war would require a structure but little short of a

Chinese wall, with bastions mounting guns to range and rake every point, from one end of our extended sea-front to the other.

Solomon's exchequer could not withstand the drafts which such a complete system of defence would make upon the treasury; and neither the minds of the people nor the purse of the public was prepared to incur it. Accordingly, the most important points were selected for fortifications, which, even if completed, would not have protected the country from invasion; they would only have prevented the enemy from anchoring with his fleet in the most safe roadsteads, and from landing with his forces at the most convenient places, and from battering down our cities with the guns of his men-of-war.

And upon the carrying out of this system, as incomplete as it necessarily was, there was involved, according to the estimates of the most skilful and accomplished engineers, a sum of money which it would be difficult for the imagination to conceive, for it required eight or nine places of figures to comprehend it, so enormous was the amount.

While this system, expensive and defective as it was, was in progress, commenced those changes in the country to which I have alluded; a change of population from eight to twenty odd millions, in the means of spreading the alarm of an intended invasion; a change from the signal fire on the mountain and the horse and his rider, to the fiery footed messenger of heaven, to raise the country. For the foot pace of twenty miles a day, as the weary rate of our advancing armies, a change which ties infantry, cavalry, and artillery all to the tail of the iron horse, mounts them on railroads, and speeds off with them at the rate of twenty times twenty miles a day, with the ability to land them at the appointed place at the appointed time, refreshed with the ride and ready for battle; a change in ordnance and missiles of death, which are far more destructive and much more terrible in battle than any ever known in the annals of military warfare, Anno domini 1816.

These changes are enough to revolutionize the system of coast defences. They have rendered effete in part the system of 1816.

Railroads are now already completed, or actually in process of construction, leading from New York up among the granite hills of New England—back to the lakes and beyond the mountains—cuts the great Miami bottom, and spreading themselves out over the rich prairies beyond.

From Norfolk they go north and south, and are ramifying themselves far away into the back country, with the intent of reaching the very heart of the nation in the good valley of the west.

Now, were it possible for an enemy, with the greatest army that ever was led into battle by the greatest captain, to take the country by surprise, and to land at Long Island sound, or in Lynn Haven bay, and to be disembarking his last piece of artillery before he was discovered, these railroads, the power of steam, with the aid of lightning, would enable the government, before he could reach the heights of Brooklyn, or the outskirts of Norfolk, to have there in waiting and ready to receive him and beat him back into the sea, a force two to one greater than his, however strong.

Suppose that in 1847 there had been in active operation between Vera Cruz and the city of Mexico a line of magnetic telegraph and such a railroad as is the Erie road of New York, can it be supposed that our generals, being cognizant of the facts, would have so much as entertained the idea of landing there as they did and laying siege to the town.

All the world knows where our railroads are, and that the country is protected from military surprise and invasion from the sea by a net-work of telegraphic wires; the mere knowledge of the fact that Norfolk and New York can bring to their defence such resources will forever prevent even the thought in the mind of an enemy of landing in force at Lynn Haven bay or on Long Island.

Those roads, therefore, render a siege to any of the works of defence before those places out of the question.

To lay siege to any place along our sea-front involves not only the disembarking of an army, but the landing also of the siege-train. This requires time.

From the time that the head of our invading column jumped out of the boats, up to their waists in the water, at Vera Cruz, till General Scott was ready to send his summons to the city, was thirteen days, and it was four days more before his heavy artillery drew overtures from the besieged—total, seventeen days.

Imagine an army, the best equipped it may be the world ever saw, that should attempt to beleaguer one of our strongholds for seventeen days. Within that time we could bring against him, by railroads and steamboats, millions of the freemen, which this country ever holds in reserve, to fight its battles. It might be Boston, before which this imaginary army is supposed to set down in imaginary siege, or it may be New York, Philadelphia, Norfolk, Charleston, or New Orleans—it is immaterial where. In less than half the Vera Cruz time we could throw millions of men into any one of these places, and subsist them. In the meantime, by a daily market train of cars and steamboats, catering for them in the abundant markets of the Mississippi valley.

It is impossible that any army, however brave, spirited, and daring, should ever think of invading a country like this, and attacking us upon our own ground, when we have under our command such powers of concentration and such force in reserve as twenty millions of freemen, the electric telegraph, the railroad car, the locomotive, and the steamboat.

The present system of fortifying the coast is founded on the principle of making the fortifications "strong in proportion to the value of the great objects to be secured."*

This is the principle upon which every system of national defence must rest; and as to this principle itself there can be no difference of opinion. The question is, in what shall the strength of a fortification consist? For a fortification that is strong against the most powerful weapons and modes of attack known to our age may be weak before those that the inventions and improvements of another age may call forth.

In the feudal times castles were built to enable those within to withstand the attack of spearmen and archers. These old castles were strong in their day, but in ours they are impotent and of no avail.

The fortifications of 1816 were built to withstand the armaments which were mounted upon the ships of that day; and what were they?

In 1812 the Duke of Wellington, when preparing to besiege Badajos, wrote to Admiral Berkley, commanding the Lisbon station, to request the loan of twenty twenty-four pounders from the fleet. Admiral Berkley, in reply to the request for twenty-four pounders, stated that no ship under his command carried guns of so *heavy* a nature; but offered to supply twenty eighteen pounders, with carriages and ammunition complete.† It would be difficult to find now-a-days any ship in any fleet with guns so small as a twenty-four pounder.

Now it has been proven, or made probable, that it is practicable to put on board ships, carry to sea with safety, and manage with effect, long guns with a calibre for shot of one hundred and thirty-five pounds at least; and it would be as reasonable to expect a fortification which was built to resist shot of eighteen or twenty-four, or even of thirty-two or forty-two pounds, to withstand the concussion of shot of one hundred and thirty-five pounds weight as it would be to

* See report of the board of army officers, 1840, on the military defences of the country—a paper that is drawn with great ability, and to which I shall occasionally refer. It is contained in Pub. Doc. No. 206, House of Reps., 1st session 26th Congress.

† Journal of Sieges in Spain and Portugal, vol. 1, p. 145.

expect a thirty-two pounder to strike harmlessly against a wall which was built only to resist a ten pound shot.

In 1816 our fortifications had to be provided with the means of withstanding sieges. Hence, they were required to be as strong in the rear as in the front, and to be equally invulnerable from every direction. But now steam and electricity render our seaboard fortifications invulnerable in the rear and protect them against sieges. Attempts to carry by storm may be made; but as for an enemy who sees and understands, as the leader of every army must see and understand, the powers of concentration which steam gives us—as for such an enemy to think of setting down before one of our strongholds and proceeding regularly to invest it, by executing parallels, building fascines, digging trenches, throwing up embankments, making approaches and the like, it is out of the question. Our railroads perfectly protect the entire coast line from Maine to Georgia from any such attempt. We may be blockaded by sea, and harassed from ships, but we cannot be beleaguered on the land.

These are the changes which have rendered necessary a change in the whole system of national defence, and the *chief stationary works of defence* which we now want along the Atlantic seaboard, are those that will protect our *cities and towns* from the great guns of big ships.

We may admit, in imagination, now, a dashing enemy again into the Chesapeake; we may suppose him landed, with all his forces, and to be, without opposition, in the act of taking up his line of march again for this city.

Now, is it not obvious—supposing the country to be in a reasonable state of preparation at the commencement of war—supposing this much, is it not obvious, by sending telegraphic messages, and using the powers of steam for conveyance, the American general might sit down here, in Washington, and at daylight the next morning commence an attack upon that enemy, both in front and in rear, with almost any amount of force, consisting of regulars, volunteers, and militia, that can be named. Retreat, for such a foe, would be out of the question, and re-embarkation an impossibility.

Therefore, so far as the system of 1816 was intended to defend the country from invasion along the Atlantic seaboard, steam, railroads, and the telegraph have rendered it as effete as did the invention of fire-arms the defences which the military science of that age had erected against the shafts of the archer.

It is not going too far to say that, as for invasion, we might raze every fortification along the Atlantic coast without exposing the country to the danger of being overrun by an enemy in war. He might, in such a case, take possession of our seaports, destroy our dock yards and arsenals, and do an incalculable amount of mischief, but as for his venturing to leave the strongholds on the seaboard, and attempting to penetrate, even for a few miles into the interior, would be out of the question.

He would be besieged from the moment of his landing; he might return to us our cities in ruins, our dock yards in ashes; but as for invading the country, and marching his armies over it from place to place, our steam machines forbid it. Hence I maintain, we now want fortifications only to do what railroads and steam never can, viz: as before said, to protect our *seaport towns* from the great guns of big ships.

Suppose the system of 1816 to have been completed; that the fortifications therein contemplated had all been built, provisioned, equipped, and garrisoned. Now, saving only those which protect the large cities from the guns of men-of-war, suppose the alternative should be presented to our military men, whether they would undertake to defend the country from invasion, with such a complete system of fortifications, but without the assistance of railroads, steamers, and telegraph, or with the assistance of railroads, steamers, and telegraph, but without the aid of the fortifications.

I suppose, could such an alternative be submitted to every officer of the army,

from the oldest down to the youngest, that there would be but one answer, and that would be, "down with the forts, and give us the railroad, the locomotive, the steamboat, and the telegraph."

I do not mean to advance the opinion that railroads, steam, and the telegraph, with the military powers of concentration which they give us, have rendered fortifications *entirely* useless. By no means: steam and electromagnetism on the land can do but little against the tremendous power of armed ships on the water; and if these can bring any one of our large cities within the reach of their guns, its destruction is inevitable, despite all that the powers of the locomotive and the telegraph can do. It is chiefly to *keep such ships from burning cities and havens*, within reach of their broadsides, that we want forts and castles.

Therefore seeing that, in 1816, when the present system of defending the coast was planned, railroads and the magnetic telegraph were unknown, they now ought to involve modifications of that system. In military operations they are powerful auxiliaries. They introduce new elements and new features into the arts of war; they bear upon the whole system of attack and defence. They, therefore, cannot fail to make necessary certain modifications in any system of coast defence which was planned without regard to them.

With this exposition of my views, I proceed to answer your first question, viz:

"1. To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?"

Let us first consider the modification applicable to the Atlantic seaboard, and then those that are applicable to the Pacific.

The only fortifications that are wanted along our Atlantic seaboard, except those at Key West and the Tortugas, at Ship island, and at one or two more such places, are those which will protect our cities and towns from the broadsides of men-of-war.

The forts already completed, or well advanced towards completion, are believed to be sufficient for this. They should, however, be mounted with heavier ordnance, and pieces of the most effective calibre for throwing explosive shot and shells.

In 1840, the House of Representatives, by resolution of April 9th, called upon the War Department for a report—among other things, "of a full and connected system of national defence."

The subject was referred to a board of engineer officers, who presented their views in a masterly manner. I have before referred to this well-drawn paper, and shall have frequent occasion to refer to it again. That report sustains the system of 1816. The source whence it comes entitles it to far more weight than is attached to any of my opinions. Nevertheless, honestly differing with that board in some of its positions, I hope I may be permitted to express that difference of opinion without laying myself liable to the charge, from any quarter, of want of respect for the distinguished officers who composed that board.

That report, which is by far the most able paper that I have seen in favor of the system of 1816, does not contemplate any guns for our fortifications heavier than a forty-two pounder, or an eight-inch howitzer; of course I speak technically, and do not allude to mortars.

It may be considered as a fact pretty well established, that two or three explosive nine or ten-inch shells, well aimed and properly planted, are enough to tear out the side of the largest ship, and completely to disable, if not wholly to destroy her.

I quote from the experiments made with nine-inch explosive shot, in the harbor of Brest, upon the *Pacificateur*, an eighty-gun ship.*

*Vide an account of experiments made in the French navy for the trial of shell guns, &c., by J. H. Paixhans Lieutenant Colonel—translated from the French by Lieutenant John A. Daulgren, U. S. N.

The peice to be fired was mounted on a small pontoon, and planted off upon the water to the distance of about six hundred and forty yards from the eighty-gun ship, which was to be the target.

The experiments were made in the presence of a number of the most eminent officers in the French navy.

The first shot sufficed to determine opinions; but, to complete the evidence, twelve shots were fired.

The following is a summary from the official report on the occasion :

"The first shot struck low, and, as soon as the explosion was heard the commission repaired on board. A thick smoke filled the between decks, where the bomb had burst. The fire engine was worked and the smoke lasted ten or twelve minutes; the bomb had made a breach of eight and a half inches in diameter in the ship's side, which there was twenty-nine inches thick; it had torn off two feet of the inner plank and then exploded; made a hole in the orlop deck of two to three feet square, knocked away and shattered to atoms more than one hundred and sixty square feet of timber.

"The second gun traversed the quarter-deck, carrying with it two peices of plank, one of which was five and a quarter feet long, then striking the mainmast obliquely, it knocked off a splinter from three to four feet long and nine and a half inches thick, and bursting, tore away a mast band ten and a half feet in circumference, weighing one hundred and thirty pounds; this mass of iron was driven with such a force that one of its halves struck the opposite bulwark, seventeen feet distant, where it flattened and adhered. The splinters of the bomb shattered the bitts, cut some of the braces, and would have injured many men and articles of rigging if the ship had been equipped. The explosion also set fire to a coil of rope.

"The third bomb entered the side, between two ports, struck and tore off an oaken knee seven feet five inches long and six and a half to thirteen and three-quarter inches thick, which, with its iron fastenings, weighed more than two hundred and six pounds; then bursting, its splinters knocked down forty of the wooden figures nailed around the guns to represent men. The explosion also shattered one of the beams supporting the deck above, starting several planks, one of which was ten and a half feet long, and another five and a quarter feet," &c.

"To abridge this detail, I will," says the reporter, "only refer to the two most remarkable shots of the remaining nine.

"Perceiving that the bombs always passed through the side of the vessel, the charge of the gun was diminished each time. With four and a half pounds of powder, and always at six hundred and forty yards, a bomb struck in the wood, between two ports, and burst, tearing away the frame and planking, and making a breach of several feet in height and width, so shattered that all present thought that *the shot would have endangered the vessel* had it taken effect near the water-line.

"Besides this, two pieces of the iron work, weighing sixteen pounds, were driven in board by the force of the explosion, and nineteen figures knocked down.

"Finally, the twelfth and last bomb, with the same small charge and at the same distance, struck the corner of a port, knocked away a heavy piece of iron work, and lodged on the other side of the ship against an iron knee five and a quarter inches in size and firmly supported; the blow made three fissures in the iron, two of which were four and a quarter inches thick; and the bomb still unbroken buried itself further in the side, burst, and knocked down twenty figures."

As to the havoc made upon a ship by these projectiles, the French commis-

sion was of opinion that it was "so terrible and so great that it is thought that one or two bombs of this kind bursting in a battery would make such confusion as to cause the surrender of the vessel, or at least conduce materially to it;" and "to produce, by the power of the bomb and its splinters, such damage in the frame that if the explosion should take place near the water-line the vessel would probably sink. There is no doubt on this subject," it was added, "as may evidently be perceived from the result of bomb No. —, which, had it struck a few feet lower, would certainly have done irreparable mischief."

"That any ship "must *unavoidably give over the attack* on being struck with a few shells."

"That it would be very useful to mount these guns either on floating pontoons, gunboats with sweeps, or steamers; and it is thought that for the *defence of roads and coasts*, or for attacking ships in a calm, or on a lee shore, the success of the bomb cannon would be infallible."

Furthermore, that commission of distinguished men also expressed the unanimous opinion "that these shell guns would be of incalculable utility in *coast batteries*, gunboats, or launches, bombardment, floating batteries, steamers," &c.

The subject was brought before the Academy of Science, and the opinion of the board were indorsed by that body after full deliberation.

Subsequently a second trial was made upon the same ship in the presence of another board of officers, with like results. This board, after a full discussion as to the effect of these shells, gave it as their opinion likewise, that "their power is so terrible that should one or two bombs of this kind burst in a battery, the vessel would be rendered untenable; that the explosion of a bomb in the frame of a ship would be productive of great mischief; and if this occur at the water-line, the vessel must founder, as may be inferred from the effect of bomb No. 8."

Respecting the use of this kind of ordnance in fortifications the commission were unanimously of the opinion that these guns are capable of prodigious effect in coast batteries, *as no ship of any force could possibly withstand such a fire at 640 guns or 1,300 yards*; that it will also be desirable to mount the new artillery on floating batteries, launches, gunboats, or steamers; and it is believed that the bomb cannon is well adapted to the defence of roads and coasts, the attack of ships in a calm, or on a lee shore," &c.

Moreover, the experiments which have been conducted by the Bureau of Ordnance and Hydrography of the United States navy, show that guns of this heavy calibre will carry further and truer, and penetrate deeper than 32-pounders; and, therefore, considering that the navies of the world are substituting these heavy guns, whenever they can, for the old 32-pounders, and considering that it is *ships*, and not sieges, that our fortifications are to be called upon to withstand. it appears to me it would be both prudent and judicious so to modify the plan of 1816 as to furnish our forts, as far as practicable, with heavy ordnance, all of the most effective and destructive kind.

Whether a ship's battery, throwing 10-inch solid shot, would not readily breach the walls of our strongest forts is worthy of inquiry. The concussion from such a broadside would be tremendous. It is true there are no ships at present that can throw such a broadside, yet it is thought practicable and desirable by navy officers to build such ships, and experiments have been made which leave no doubt that such ships will be built. Whether our ramparts on shore could withstand such ordnance is not for me to say. I therefore suggest the inquiry.

It is a curious fact that, as a general rule, the fire of large forts has always been proportionally less destructive than those mounting only a few guns, and having those in barbette, in open battery, either with or without breastworks.

This may be accounted for by the smoke; for wild firing applies not only to

the guns of a fort, mounted in casemates, but also to the guns of double-decked ships.

A single broadside from the gun-deck of a man-of-war will so fill her between decks with smoke as to render the object at which she is firing invisible, and consequently, unless she will wait for her own smoke to clear off, which requires some time, the rest of her firing, as all sea fights prove, is without aim, very much by guess, and therefore to little purpose.

The same is the case with guns fired from casemates of forts on shore, for in no other way can we account for the random firing; the very shots, in proportion to the whole number cast, that tell in the engagements of double-decked ships and casemated forts.

Two frigates or two seventy-fours will engage each other within pistol shot, or a fleet will attack a fort, and when we come to count the shot that have been fired, and to compare those that have told with those that have been thrown away, and then recollect the size of the target, we are astonished.

In the action between the *Constitution* and the *Guerriere*, which lasted for about half an hour, the two ships being within pistol shot, the former suffered "very little in her hull, and lost but seven men."*

In the fight between the *United States* and *Macedonian*, the two ships were at close quarters for one hour. The former had five men killed. "The *United States*," says the same authority, "suffered surprisingly little, considering the length of the cannonade."

In the case of the *Constitution* and the *Java*, the action lasted two hours. The *Constitution* lost nine men, and only "received a few round shot in her hull." Perhaps in this time the *Java* did not fire less than two thousand shot, and fifty of them, well placed in the hull of her antagonist, would have sunk her.

The *Hornet* and the *Peacock* were single-decked ships; their smoke would clear, and the *Hornet* could see to take aim. In less than *fifteen minutes she sunk her antagonist*.

In the battle of the Nile, where seventy-fours were principally engaged, and they in smooth water at anchor, and close, too, lasted through a part of three days. (No firing here like the *Hornet's*, though her target was so small in comparison. The secret is, she fired with aim; they, blinded in smoke, without.)

The action between the *Wasp* and the *Frolic*, also single-decked vessels, lasted forty-three minutes, in which time she killed and wounded aboard the *Frolic* amounted to between ninety and one hundred. These small vessels are more unsteady in a sea-way than large ones; they do not offer so large a target, and yet their fire is so destructive. How else is it to be accounted for?

In the battle of *Trafalgar*, which was of long duration, and mostly between ships-of-the-line, the loss was only about six men to every ten guns engaged, not one-tenth part of what it was in the action of the *Wasp*.

The use that I intend to make of these facts may be objected to, on the ground that I deduce a principle from the sea and apply it to the land, viz: that, because at sea, guns fired in the open air are much more destructive than those about which the decks confine the smoke, it does not follow that guns, when served from behind sand bags or mud banks on shore, are more destructive than they would be if served in casemates, by a crew blinded with smoke. I will quote cases directly in point: our army in Mexico, with guns behind sand bags, battered down the walls of Vera Cruz, and lost only some half dozen men in the siege.

At the battle of *Fuenterabia*, in 1836, the town, with two guns of small calibre behind an old wall, and a third of large calibre, which was added on the evening

of the attack, was successfully defended for a whole day from a combined attack of British and Spaniards, in six armed steamers and a number of gunboats.*

Then there was the famous case of the Martello tower, in the bay of Martello, in Corsica; one heavy gun, on the *top* of a tower, beat off in 1794 "*one or two British ships-of-war*," without sustaining any material injury from their fires."

"This circumstance," says Colonel Pasley, in his rules for conducting the practical operations of a siege, "ought merely to have proved the superiority which guns on shore must always, in certain situations, possess over those of shipping, *no matter whether the former are mounted on a tower or not.*"

This is quoted with approbation by Colonel Totten, in his celebrated report of 1840, as an example of the superiority of forts over ships. But it appears to me only to prove and beautifully to illustrate the superiority of one gun, so mounted that it can fire *with aim*, over many guns that are enveloped in smoke, and fired without aim.

But if this Martello case affords grounds really for the "just decision" claimed by these two distinguished military authorities, then why have any forts at all? Why should our army engineers advocate so elaborately in 1836, and with so much ingenuity in 1840, the continuance of the system of 1816, if one gun on shore, "whether mounted on a tower or not," can and ought to beat off "one or two British ships-of-war?" May I not, therefore, in proposing to reply, in part, upon open batteries on the shore for coast defence, urge the modification as a thing proved by actual experiment, and, by legitimate conclusion, quote in favor of such modification the opinion of our most distinguished engineers? We can never expect our works on the seashore to have anything stronger to resist than "British ships-of-war;" and if one gun, in open battery on the shore, "whether mounted on a tower or not," be superior to "one or two" of those ships, surely our seaport towns of second and third rate importance may safely rely upon open batteries on the beach to protect them from "British" or any other "men-of-war."

Colonel Jones, another authority of equal weight in military matters, quotes Nelson's attack upon Copenhagen, Sir John Duckworth's daring passage of the Dardanelles, the attack at Acre in 1840, and Lord Exmouth's cannonade of Algiers, as cases which lead to the supposition that land batteries cannot resist an attack by fleets. The Queen Charlotte, bearing Lord Exmouth's flag, being brought within fifty yards of the Mole, at Algiers, "poured such an irresistible fire on the works around," says Colonel Jones, "as to silence every gun, and was ultimately compelled to withdraw, with the loss of only eight men killed and one hundred and thirty-one wounded."

The sides of a ship are of wood; it is combustible, the walls of a fort are not; and on board ships in a fight it is the splinters that do the mischief. One gun, even in open battery on the shore, has greatly the advantage of one gun on board ship. The former can take better aim, has nothing to fear from splinters, and presents a very small target; whereas it has the whole ship, with all its vulnerability for a target. But as to the superiority of ships over forts, it appears to me there is scarcely room for the question; each in its own sphere is superior to the other.

And that the Queen Charlotte should silence the mole battery, is to be accounted for upon the principle of firing with and without aim. She was within fifty yards of it; it therefore occupied nearly or quite one-half of her horizon, and she *could not miss it*, it was so large. In comparison to the fort she was a small target, and it required some attention to aim to hit her; but the smoke on both sides prevented this.

Therefore, supposing that in the attacks of ships against forts, the guns on each side be served with equal bravery, the question of superiority resolves

* Colonel Totten's Report on National Defence, 1840, Doc. No. 206, page 16.

itself almost entirely into a question of marksmanship. A shot that is fired without aim is generally a shot thrown away,

Nevertheless, the gallant colonel very properly cautions the "engineer charged with the defences of maintaining a fortress, so to arrange his batteries that the defence may be from several points distant from each other, armed with fifty-six pounders as the lowest calibre."

The system of 1816, according to the report of the board of army officers in 1840, does not contemplate a single gun heavier than a forty-two pounder, or an eight-inch howitzer. It contemplates mortars, but mortars against ships and random shots.

Previous to the attack of the junk ships in 1782, Gibraltar resisted a bombardment for two years.*

In 1789, Admiral Rodney threw into Havre de Grace 19,000 heavy shells, and 1,150 carcasses, in fifty-two hours, "to destroy a few boats."†

In 1792, the Duke of Saxe Tessenchen threw into Lille, in one hundred and forty hours, "without effect, 30,000 hot shot and six hundred shells."‡

In 1795, Pichegree threw 3,000 shells into Manheim, and 5,000 into the Fort of the Rhine.§

In 1807, at Copenhagen, in three days of partial heavy firing, 6,412 shells, besides carcasses were thrown.|| All these were thrown to no purpose.

At Fort Browne, on the Rio Grande, our men dodged the shells thrown by the Mexicans from Matamoras.

At Fort McHenry "the bomb bursting in air" furnished the poet with a stanza; they produced no other effect.

Bonaparte's opinion of them may be learned from the instructions which he caused to be issued to the governors of besieged towns.

"Quant aux effets des bombes, et des autres projectiles incendiaires, nous examinerons plus tard, les moyens de les diminuer; mais nous observerons dès ce moment, qu'ils n'ont jamais contraint une place, bien défendue à se rendre. Les anciens sièges, en offrent la preuve; et les exemples tout réens de Lille, de Theonville, et de Mayence, la confirment."

Therefore let us modify the system, so far as most of the mortars and all the 6,309 pieces of ordnance, from a twelve up to a long forty-two pounder, required by the plan of 1816, are concerned, and substitute for them the heavy calibres of the present day—the nine, ten, and eleven-inch solid shot and shell guns.

Taking the Martello tower for our guide, let us also, instead of building forts of the second and third class, contemplated in the system of 1816, send to every town along the seaboard, that an enemy could reach in his ships, one or more heavy pieces, and plant them there in open battery upon the beach, for the defence of the place, "no matter whether they be mounted in a tower or not."

By a proper organization, easy to be effected and kept up without any draft upon the treasury whatever, except for powder and ball to practice, volunteer crews for these guns may be procured from the towns themselves. Well-trained officers of the army should be sent to instruct them. In such hands each gun so planted and served out in the open air, having an embankment or a few sand-bags for protection, will be more than a match for "two British ships-of-war."

Sir Sidney Smith, whose dashing gallantry and skilful bravery have been so much admired, attacked and felt the force of one of these open batteries in 1806. He was in the *Pompée*, an eighty-gun ship, and accompanied by two frigates; he anchored about seven hundred yards from a battery of two guns, situated on the extremity of Cape Licosa.

"The line-of-battle-ship and frigates fired successive broadsides till their ammunition was nearly expended; the battery continually replying with a slow

* Sir J. T. Jones's *Journal of Sieges in Spain*, vol. II, page 374.

Ibid.

† Ibid.

‡ Ibid.

§ Ibid.

but destructive effect. The *Pompée*, at which ship alone it directed its fire, had forty shot in her hull; her mizzen-topmast carried away; a lieutenant, midshipman, and five men killed, and thirty men wounded. At length, force proving ineffectual, negotiation was resorted to, and after some hours' parley, the officer, a Corsican, and a relation of Napoleon, capitulated. It then appeared that the carriage of one of the two guns had failed on the second shot, and the gun had consequently been fired lying on the sill of the embrasure; so that, in fact, *the attack of an eighty-gun ship and two frigates had been resisted by a single piece of ordnance.*"*

Whatever Napoleon's cousin could do with a gun, our officers, our soldiers, and the yeoman of this country can do as well.

This turning out of the citizens to defend their town, with a gun in open battery, against the attack of ships-of-war, is no experiment with us. The thing has been handsomely, gallantly, and successfully done.

"The affair of Stonington," says General Totten in his report of 1840, "during the last war, affords another instance of successful defences by a battery. In this case there were only two guns (eighteen pounders) in a battery which was only three feet high, and with embrasures. The battery *being manned exclusively by citizen volunteers* from the town, repelled a persevering attack of a sloop-of-war, causing serious loss and danger, but suffering none."

In the war of 1828, between Peru and Columbia, I was serving on the Pacific station. Admiral Guise, a dashing officer and brave Scotchman, attacked the city of Guayaquil with the Peruvian squadron, which consisted of a frigate, a sloop-of-war, and several brigs and schooners. The approaches to the city were undefended. He took up his position without molestation within musket shot of it and commenced his fire.

Under cover of the dark the besieged threw up an embankment, and planting two or three field-pieces behind it opened a fire upon the ships at daylight, killed the admiral, and beat off his squadron.

The annals of war, the written arguments of the most distinguished officers of the engineer corps, and the facts which I shall state, afford, to my judgment and reason, ample grounds for the position which I maintain as to the dispensing with fortifications, in a large majority of cases, along the seaboard; and of substituting therefor a few pieces of this new, heavy, and destructive ordnance, without the protection of any mason work whatever. If these facts, annals, and arguments do not impress conviction upon your mind as strongly as they do upon mine, it is not because of their insufficiency—but because, in attempting to apply and illustrate them, I have obscured their bearing and weakened their force.

"The fortifications of the coast," says the board of army officers, whose able report of 1840 quieted the public mind, and fastened for ten years longer upon the country the effete system of 1816; "The fortifications of the coast," say they, "*must be competent to the double task of interdicting the passage of ships and resisting land attacks—two distinct and independent qualities.* The first demands merely an array in suitable numbers and in proper proportions of heavy guns, covered by parapets, proof against shot and shells."†

Now I propose to show that the railroads and the means of locomotion in this country sufficiently defend our fortifications from land attacks; and that consequently the principal requisite henceforward in a system of fortifications for the coast, is merely an array in suitable numbers and in proper proportions of heavy guns along the beach to cover the approaches of ships from sea to seaport towns.

*Journal of Sieges.—Colonel Jones.

†Page 41, Doc. 206, House Rep., 1st session 26th Congress.

To support the propositions taken by General Totten in favor of the system of 1816, both in his report of 1840 and 1836, there was a table in the latter estimating the number of men that, according to the census of 1830, could be concentrated in Boston, Newport, New York, Philadelphia, Norfolk, Baltimore, Charleston, Savannah, and New Orleans in eleven days.

This table was made the basis of important deductions in favor of the present system; and as the state of things now is so entirely different from what it was then, I quote the table in order to show that the changes which have taken place in our means of concentrating and moving forces in war leave abundant room for many modifications in the old system of 1816.

TABLE F.*



Exhibiting the amount of militia force that may be concentrated at Boston, Newport, New York, Philadelphia, Norfolk, Baltimore, Charleston, Savannah, and New Orleans successively, from the first to the eleventh day; each day's march being computed at fifteen miles—founded on the census of 1830.

Days.	Boston.	Newport, R. I.	New York.	Philadel- phia.	Norfolk.	Baltimore.	Charles- ton.	Savannah.	New Or- leans.
1	5,492	1,397	90,918	96,132	1,864	10,046	9,513	1,173	3,092
2	28,351	2,373	28,131	26,521	2,880	18,042	7,160	3,960	7,636
3	34,138	12,340	44,133	35,450	4,416	21,266	9,475	5,948	8,716
4	39,561	17,143	57,925	69,100	7,608	27,916	14,601	6,528	12,499
5	49,127	33,221	59,408	70,608	11,101	31,297	18,443	9,263	14,474
6	59,893	42,807	81,252	127,666	14,511	49,648	22,490	19,725	17,330
7	81,867	61,335	104,180	154,036	90,699	65,362	24,394	21,003	17,906
8	97,697	65,583	137,048	187,703	98,030	77,543	29,416	25,320	29,561
9	111,655	83,111	152,841	196,285	32,562	78,164	40,835	36,630	26,433
10	125,326	109,268	164,116	209,983	36,446	87,550	45,562	41,345	28,140
11	144,076	130,824	191,353	221,603	45,549	101,970	59,701	60,422	31,647

This possible concentration of forces, which it required eleven days to make in 1836, may be now doubled and trebled, and made in as many hours; surely, therefore, this process of concentration—this immense artificial military aid which steam and electricity now afford, and which was not anticipated nor counted upon in 1816, when the foundations of the system were laid; surely they, by protecting our forts against sieges, call for modifications and suggest changes which it would be wise to consider and prudent to make.

In this country, more than in any other, the genius of free institutions compels the government to keep pace with the improvement of the age. The people do it, and they are the government. But in military establishments there is evidently a disposition to lag behind.

"In 1708 Marshal Boufflers, by authority from the King, given on the advice of the most experienced generals of that warlike age, ceded the strongest fortress in France to Prince Eugene and the Duke of Marlborough, to avoid the risk of the breaches being carried by storm; and in those days the superiority of the assailants was never doubted. The art of attack has since that period received various improvements, and the art of defence remains the same."[†]

The edition from which I quote was published in 1846—the work is one of acknowledged authority among military men—and according to it, it would be better to give our forts away than actually to subject them to a siege. Neither Vera Cruz nor any other fort in Mexico could withstand a siege from us. How important therefore is it that we should introduce in our system of coast defences

* Page 71, Doc. 293, first session twenty-fourth Congress.

† See Journal of Sieges in Spain, vol. 2, page 336.

some of the "various improvements" which the art of attack has received since 1708, and of which the art of defence has received so few! That instead of fighting ships from batteries of old-fashioned carronades, long twelves, eighteens, and twenty-fours; instead of the old-fashioned mortars, which Napoleon put his seal against, let us have in our forts the improved shell guns and heavy ordnance of the present day, which will plant shot and shell where they are aimed, and carry destruction to a distance which not a gun with which our forts (according to the list by the army board in 1840) are to be furnished can ever reach.

I am permitted by Commodore Warrington to quote from experiments which he has caused to be made in naval gunnery at the Washington navy yard.

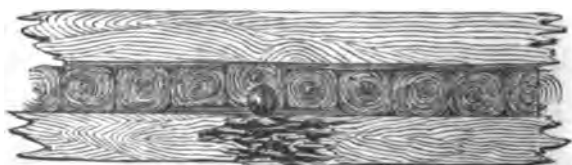
These experiments are going on there daily; any one who pleases may witness them. I cite from them to illustrate the position I maintain as to the destructive powers of this new and heavy ordnance, the accuracy of its fire, &c.

The figures are copied from the note-book of Lieutenant Dahlgren, United States navy, the officer who conducts the experiments.

The target is built of one upright and two horizontal layers of stout oak logs, bolted and fastened together in the most substantial manner. It is two and a half feet thick. These experiments were not conducted to represent the effects of this heavy ordnance upon forts and their walls, but upon wooden walls and the sides of ships. Therefore shells were used in the eight and nine-inch pieces to contrast their range and probable effect with the range and probable effect of a solid 32-pound shot.

The charge of powder used with the 32-pound shot was twenty-eight per cent. of its weight. The charge used with the two shells was only about thirteen per cent. of their weight, or, in proportion, not half as much as that used with the solid shot. Figures 1, 2, and 3 exhibit a horizontal section of the target, made to show the penetration of the shot.

Fig. 1.

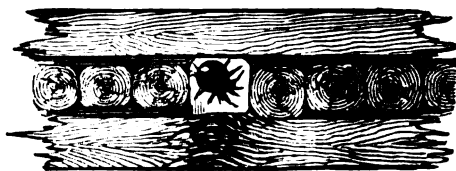


8-inch shell, seven pounds of powder.

The penetration of the 8-inch shell was the least. It was unloaded. Had it been charged it would have been lodged in the best place; for, exploding in the middle of the target built to represent the side of a man-of-war, it would have torn it to pieces.

Figure 2 is the 32-pound shot. The hole that it leaves behind it is so filled up with splinters that a common knitting-needle cannot be thrust in after it. Such a shot as figure 2 would do no serious hurt to a ship's side.

Fig. 2.



32-pounder shot, nine pounds of powder.

Fig. 3.

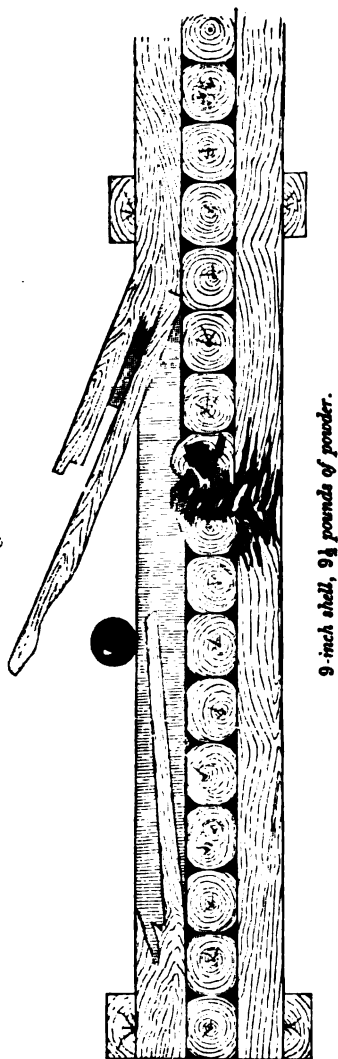


Figure 3 is the 9-inch shell. Here the shot went through and dropped down on the other side of the target, as shown in the drawing. It tore off the logs and scattered the splinters in the most frightful manner. Much more would it have gone through had the shot been solid instead of hollow, and had it been fired with a full instead of a very reduced charge of powder.

These big hollow shot, and the bigger the better, are the things for our forts to use against ships; whereas it is the big solid shot that ships want to use against forts, for shells, after striking, are apt to explode without penetrating or breaking a stone wall.

Figure 4 illustrates a common example of target firing in the open air. This target is not one-fourth the size of that presented by the cross section of a frigate. One nine or ten-inch shell lodged in the ship's bows as she approaches, and exploding, would probably sink or destroy her. Neither of the two gentlemen named on figure 4 (whose balls were so well planted) ever saw a shotted gun fired before. They pointed and aimed it themselves; and it is a fair example of what an unpracticed eye may do with a gun when planted where it may be fired with aim.

Certainly we have nothing like invasion by sea to fear from any nation on this side of the water, and it is hardly probable that any of the crowned heads on the other side would have the hardihood to send into this country invading armies from beyond the sea. The very air we breathe protects us from any such liability. It is *free air*. Our republican institutions are dangerous to kings; and, in the minds of the kings, the effect of these institutions upon the soldiers of royal armies is far more dreadful than would be the system of 1816, with all its panoply of big forts and great guns.

It is, therefore, that our forts should be constructed and armed almost exclusively for resisting and repelling the attack of ships.

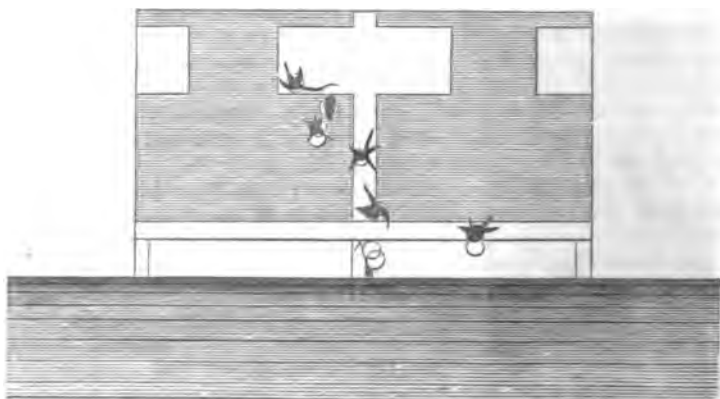
According to the Paixhan experiments and the opinion of the French officer, one or two shot from an eight-inch gun lodged in the side of a seventy-four would disable her. What would be the effect, therefore, of one or two, twice as large, from a ten-inch gun, striking a frigate or a steamer?

In turn, and per contra, suppose the battery of this heavy ordnance intended to keep ships off from all our towns, except the principal cities, to be planted on the beach without any parapet. The target that one of these guns and its crew would expose to the ship is very small, and when we consider the English mode of firing, and their sea fights, it would not be one shot in a hundred that, being fired from a ship, would strike such a target; her own smoke would conceal it from her. It affords no surface for splinters which do the mischief. So that

unless the shot would strike the gun or its carriage, and there is no necessity of having them as exposed as in this hypothetical case I have represented them to be, a shot from the ship might pass, even among the men, without its striking any of them, and consequently without doing any mischief.

Fig. 4.

Experimental battery. Practice with 9-inch shell guns, January 2, 1851.



Screen, 550 yards. Shell, 73 pounds. Charges, 9½ pounds

Present: Hon. Mr. Stanton (chairman) and Hon. Mr. White, (member,) of the Naval Committee of the House of Representatives. Some of the shot were fired by these gentlemen. The lower shells were fired with the quadrant, (54') the upper by the sights alone.

On account of the above recited facts and circumstances, on account of the considerations and reasons which they suggest, I propose, in answer to your first question, modifications to our present system of fortifications, &c., in the following particulars, to wit:

1st. That inasmuch as the new and improved heavy ordnance for throwing shot, both hollow and solid, has a longer range, gives greater accuracy, and is far more destructive than most of the ordnance with which our forts are now furnished, or than that by which, according to the report of 1840, it is intended to furnish them; therefore, I recommend that most of this ordnance of inferior range, penetration, accuracy, and destructiveness, be disposed of; that the supplies of more be discontinued; and that the new and improved ordnance be substituted in its stead.

I would not recommend that any of the old ordnance should be sold or melted down until the supplies of the new are completed, or nearly so, for occasion may arise, before we can be completely furnished with the new, when the old would be of great service.

2d. That no further expenses be incurred for preparing our fortifications along the Atlantic seaboard, to withstand sieges by land.

3d. That none of the works (except those in Portsmouth harbor) proposed in the army report of 1840,* table D, "*as works to be first commenced*," nor in table E, as "*works to be commenced next after those in D*;" nor in table F, as "*works to be last commenced*," be commenced at all.

4th. That for the protection of the towns, villages, and landings, therein to be provided for, one or more pieces, according to the condition of the place, of the most effective ordnance, be planted at suitable points behind simple embankments or earthen parapets.

* See page 74-7, Doc. No. 206, House Rep., 1st session.

The carriages of the guns so mounted should be constructed with the view of easy transportation from one point to another along the shores of the harbor to be defended; so that on rails, paved or plank roads built for the purpose, these pieces might in fact constitute a locomotive battery along the beach, and not leave it, as all shore-batteries have done, entirely optional with the assailants to choose position. As far as the defences of the town against ships are concerned, this improved ordnance may thus be converted into a sort of "flying artillery."

5th. Instead of supporting garrisons at the public expense, in times of peace, for the care and management of these guns, it is proposed that they and their munitions, properly secured, be given in charge of the State, or of the authorities of the place to be defended; first taking such legislative steps in the matter as will induce the formation of one or more volunteer artillery companies at such place for the purpose of exercising the guns, learning the practice, keeping them in order, and ready for use, &c.

Officers of the army should be detailed to instruct the volunteers thus offering, in the great gun exercise; to examine and report upon the state of these companies and batteries, and keep the government informed, at all times, as to the efficiency and condition of each.

The whole seaboard defences of this kind should be classed in divisions, each in charge of an artillery, or engineer or ordnance officer of rank, with a proper staff.

The headquarters of each division should be the principal place in it, as at Old Point for one, New York for another, Charleston, Savannah, New Orleans, &c., for others. Each of these places should be provided with the means of great gun exercise, including a field of practice, targets, the kind of roads for manœuvring this kind of ordnance, &c.

The commander of each division should have authority to invite, annually, or as often as necessary, these volunteer artillery companies, or the best disciplined of them, to visit his headquarters and exercise in the practicing field, at target firing, &c.; the government paying the expenses of the trip, by allowing so much mileage, and so much per day during the visit.

We see our volunteer companies now are continually in the habit of visiting distant towns and villages, as a body, in their military capacity, and at their own expense. The practicing and the exercise with such terrible pieces would draw together a large concourse of people. This would give éclat, and the presentation of a sword, or some other reward for the best shot, would invest this feature of the modified system of defence with much animation, and infuse into these volunteer artillery men a spirit, a nerve, and skill which, in the day of battle, would make their pieces as firm as "Bragg's battery," and far more terrible and destructive than they would be if casemated in stone walls and enveloped all the time with their own smoke.

So far my remarks, in reply to your first question, relate to the defences of the Atlantic seaboard only. I proceed now to consider how far, and to what extent, the system of 1816 may be modified with regard to the defences of our Gulf and Pacific coasts.

I will speak first of the defences for the Gulf of Mexico.

We have seen that the system of 1816, as extravagant as it is, was never intended, in the mind even of its strongest advocates, to provide fortifications for every port, harbor, and anchorage along the seaboard in which an enemy might find shelter, take refuge, or form rendezvous in time of war.

Fortress Monroe would not prevent an enemy from entering the Chesapeake bay, nor hinder him from anchoring safely with his fleet at Tangier island, nor at the mouth of the Rappahannock, the York, or the Potomac river, nor at any one of the numerous safe and commodious anchorages that are to be found above Old Point. As far as any permanent fortifications that it is possible to erect at Fortress Monroe and the Rip Raps are concerned, an enemy might select any

one of the above-named places as a rendezvous for his fleet, and make that his centre of operations against the whole bay coast, the rivers and towns along it, and carry on his depredating and marauding expeditions with just as much impunity as though no such fortress had been built.

It protects Norfolk and the navy yard from a fleet, but it does not prevent that same fleet from running up to York river, or the Rappahannock, or the Potomac, or up the bay, nor does it prevent it from landing an army at any one of these places, and marching it off against Richmond, Fredericksburg, Washington, or Baltimore. The railroad and telegraph do that.

The circumstances that such a fortress as Monroe, with an important navy yard under its cover, is between his fleet and the sea, might somewhat cramp or embarrass such an enemy in his operations is admitted, but it would not, therefore, prevent them, for if his naval forces in the bay were superior to our own, he would command the bay in spite of the fort.

Even if the Chesapeake bay was lined with works from head to mouth, and on both sides, such a chain of military posts, however strong and costly, could not prevent an enemy from entering the bay with his fleet, and safely riding upon its broad bosom, out of the reach of their guns. He might still make it the centre of his operations; most of the time the anchorage is safe in any part of the bay; these forts would be immovable; they could not go after him; and at most, they would only prevent him from selecting the most convenient places for shelter, and the best points from which to operate. That is all.

The same is the case in the Gulf of Mexico. For eight or nine months in the year vessels may ride in safety at anchor off the shore, anywhere between Pensacola and Galveston. The land there forms a lee, and affords a shelter from the northers. From two to twenty miles from the land, and in depth varying from three or four to twenty-five or thirty fathoms, the anchorage is good.

Now, if we rely upon fortifications to protect that coast, it will be observed, the whole Gulf front might be lined with them, and still they would be harmless against a fleet with its powers of locomotion. It could string itself at anchor along the coast, in sight of the very works built for defending it; and if our reliance were upon them, it might capture or dam up in stagnant ruin, all the commerce of the Mississippi valley. In the Gulf, as well as in the Chesapeake, and in our own waters generally, we must have the naval supremacy. In any plan of providing for the national defences that is an essential feature, and it ought to be *sine qua non* with Congress.

The plan, therefore, of providing permanent fortifications for the Gulf, seems to be this: that we should select a few of the points which would be most important for us as places of refuge and rendezvous, and which, if occupied by an enemy in war, would enable him the most to annoy us, and fortify them.

These points are Key West and the Tortugas, and perhaps Ship and Cat islands. In a commercial and military sense, the Gulf of Mexico and the Caribbean Sea are but an expansion of the Mississippi and Amazon rivers. In this view of the subject, the mouth of the Mississippi is not at the Balize, nor that of the Amazon at Paia; they are both in the Florida pass, between Key West and Cuba.

For one-half the year there is a sort of monsoon in the Gulf of Mexico; during this period the winds are from the southeast; at this season, therefore, the winds and the currents in the Yucatan pass are such as to prevent the passage that way of vessels from the Gulf.

Moreover, the island of Jamaica, where the English have a naval station, overlooks the Yucatan pass. When the northeast winds prevail the Yucatan pass is open to sailing vessels; but a few steamers, with Jamaica as the centre of operations, would close it to our commerce.

When the southeast winds prevail, the route of a sailing vessel bound from the Gulf to Jamaica, is not through the straits of Yucatan; it is through the

Florida Pass by Key West, and then back on the south side of Cuba. Now a maritime enemy seizing upon Key West and the Tortugas could land a few heavy guns from his ship and make it difficult for us to dislodge him. Here railroads and the telegraph do not reach, and as long as he should hold that position, so long would he control the commercial mouth of the great Mississippi valley.

In that position he would shut up in the Gulf whatever force inferior to his own we might have there. He would prevent re-enforcements, sent to relieve it from Boston, New York, and Norfolk, from entering the Gulf. Indeed, in a war with England, the Tortugas and Key West being in her possession, it might be more advisable, instead of sending from our Atlantic dock yards a fleet to the Gulf, to send it over to the British islands and sound the Irish people as to throwing off allegiance.

This country is too rich and powerful to confine itself to a system of national defences which looks to a passive state for it in any war. It cannot content itself by waiting for the enemy to come, that we may simply beat him off from our shores. Neither is it sufficient for it to have the ability to send out a few cruisers and armed privateers to prey upon the commerce of an enemy.

We have seen its free institutions, by their silent operations in times of peace, shaking the thrones of Europe, and causing the crowned heads that sit upon them to tremble. In time of war it must have the ability to re-enforce that influence with its strong "right arm." The sensibilities of the people everywhere are alive to that influence—their sympathies are so strongly with us, that should it become necessary to carry war into any of the maritime States of Christendom, the American legions would be regarded by the masses as friends and deliverers, not as enemies.

Therefore, instead of being content with the capture of a few men-of-war and unoffending merchantmen for prizes, we want a system of defences which shall enable us to send naval expeditions against the enemy's country, invite and assist the down-trodden millions to throw off the hateful yoke, to break their bonds asunder, and to stand up as freemen, like ourselves.

In an expedition upon Jamaica, Key West being in the hands of the enemy, it would be difficult for our Gulf and Atlantic forces to unite.

Therefore the works at Key West and the Tortugas should be provided with shell-guns of the most destructive calibre, and their walls should be substantial enough to resist the concussion of a man-of-war broadside. They are wanted to give protection to our fleeing merchantmen, to afford a refuge to our fleets until time and opportunity and circumstances serve for striking the blow, or making a move. They are wanted by us, because they would be so immensely valuable to an enemy.

The railroads that will be in operation from Pensacola and Mobile soon, and probably before any additional fortifications can be erected there, will secure these places from invasion and seizure; and the works already there, with a few more guns in open battery along the beach, would effectually protect them from the great guns of ships. Still, an enemy with a fleet superior to the one we might have in the Gulf could anchor along the shore, as he can in the Chesapeake, and greatly harass our commerce there. No system of fortifications can prevent that.

In the next maritime war, (and in such a war we have nothing to fear from any quarter except one,) it is not upon the Atlantic, properly speaking, that the great sea-fight is to take place: it is in the Gulf of Mexico, or near the English shores.

Jamaica is an important naval station; it commands one entrance to the Gulf. There Great Britain can assemble her fleet, and within three days have it off the Balize, in position to strike a terrible blow at the commerce of that valley.

Shutting up the Florida Pass, she would have complete control of the Gulf. Norfolk and New York are inconveniently situated to defend it. Some years ago a man-of-war was sent with despatches from Norfolk to Pensacola; she was fifteen-odd days in making the passage.

The means of defence for the Gulf should be within the valley that belongs to it. The resources of this valley are ample, its means most abundant, and its people are its best and most appropriate defenders. Pensacola should therefore be built up as a naval station, and the depot at Memphis fostered with care and solicitude. Instead of draining the treasury for forts, under the system of 1816, these two places should be put in condition for building, equipping, and fitting, upon a scale sufficient to secure to us, in war, the naval supremacy at least in the Gulf.

In a war with England, and with those two places as the centres of operations, it probably would be found desirable to move upon Jamaica and other British islands in that quarter. New York and the Atlantic dock yards would probably be the centre of other operations; and if Jamaica fall in such a war, it must fall under the guns and before the gallantry of the west—the east will have need and occupation for all its forces in other quarters.

Memphis is fast rising in importance as a place of construction. Private enterprise has already commenced to establish building-yards there; and in that teeming region there is no lack of naval and maritime resources. The ropewalk there is of no consequence. We want docks, storehouses, machine-shops, and foundries for casting, forging, making, and building anchors and cables, ships and engines; and for preparing and keeping in store, out of the excellent materials to be found in that valley, all the arms and munitions of war which would be required for the defence of the Gulf, the capture of Jamaica or any other British possession, if Britain be the enemy.

The affections of these islanders for the mother country cannot, in the nature of things, be as strong or as abiding as those of our citizens for their own home; and therefore it may be imagined that an attempt by us to invade and get possession of these islands would be quite a different affair from an attempt, on her part, at invasion and conquest here. A tower of strength has this nation in the brave hearts and strong arms of its gallant yeomanry. Small indeed would be the degree of aid and comfort which a national enemy would derive from disloyalty and disaffection of American citizens.

I have, on former occasions, presented my views at large with regard to the importance of Memphis as a naval depot. These views are before the public, and therefore I deem it unnecessary to repeat them here. We have turned the corner, and are now going ahead in the peaceful race for the commercial supremacy of the seas; the next trial is to be for maritime supremacy of another sort. It is hoped that the day for that contest is far distant. But every people are liable to war; and it is a fact which we cannot blink, that, in providing for the contingency, our statesmen and warriors must, for many years to come, have an eye to the forces which Great Britain, rather than any other power, can bring against us. But let that contest come when it may, it is most likely to be decided in the Gulf of Mexico, and its twin basin, the Caribbean sea; they are the receptacles of all that the two grandest systems of river basins in the world will have to pour into the lap of commerce. The valley of the Mississippi on one side, and the valley of the Amazon on the other, will in time make these two arms of the sea the commercial centre of the world.

The mouth of the Amazon, the mouth of the Orinoco, and the mouth of the Magdalena, are, commercially speaking, almost as much in the Florida Pass as is the mouth of the Mississippi river. Such is the course of the currents, and such the direction of the winds in that part of the world, that a vessel sailing from the mouth of any one of these rivers for Rio de Janeiro, in Brazil, or for India, or for the markets of the Pacific around Cape Horn, or for Africa, or for

Europe, has first to steer to the northward and westward until she reaches the parallel of 25° or 30° north. This brings her off our own shores; and it is impossible for her to pursue any other route, so long as the northeast trade-winds prevail, or the great equatorial current which feeds the Gulf Stream continues to flow across the Atlantic. No vessel trading under canvas from the mouth of these rivers to the markets of South America, Europe, Asia, or Africa, can go any other way. They *must* pass by our doors.

Therefore, in planning a system of national defences, who can overestimate the importance of the Gulf of Mexico as a nucleus of naval means, the centre of naval operations? That centre is at Key West and the Tortugas; hence the great need of strong works there.

Interests of the most delicate, valuable, and, to an enemy, of the most attractive kind, are even now daily springing up, and expanding themselves out upon the waters and about the borders of the Gulf of Mexico and Caribbean sea—interests which, if they should be injured or put in needless jeopardy, will create a greater sensation throughout this country than would the landing of a hundred thousand men-at-arms upon our shores. These interests are maritime—they are American; their defences and protection are naval; they must be watched and guarded from the Mississippi valley. Memphis and Pensacola by nature are, by rights ought to be, and by legislation should be, the centres of operations in the case.

Panama, Nicaragua, and Tehuantepec echave, or are about to impose new obligations upon us. We must look to them, and, in providing for the common defence, take them into consideration. They are links in the chain which binds the most remote corners of the republic together. They are the gateways between distant parts of the Union; and they must therefore be cared for in peace, guarded and protected in war.

The Amazonian basin, embracing an area more than twice the extent of our great Mississippi valley, fills too large a space in the world to escape attention from us, when we are in the very act of laying the foundations for a permanent system of national defence. With all the climates of India, with unheard of capacities of production, and the most boundless sources of wealth in the field, the forest, and the mine, that valley, so soon as it shall begin to feel the axe and the plough, will pour into our lap a commerce, the value of which is as limitless as are its own vast resources. Nature has placed us in the position to command that commerce. The great business of fetching and carrying there must be ours. For coming and for going, the winds are fair for us; and we are the only nation for whose shipping they are so fair.

That arm of the ocean which severs the continent nearly in twain, to make between the "Father of Waters," at the north, and the "King of Rivers," at the south, a receptacle for their commerce, is receiving from the Mississippi valley alone an amount of produce that astonishes the world. Yet the Mississippi valley is not half peopled up. What, therefore, will this oceanic basin, this commercial receptacle for the surplus produce of the two grandest systems of river basins on the face of the earth be, when the great Amazonian valley, of double area, with its everlasting summer and its endless round of harvests, comes to be subdued and brought into cultivation? What the Gulf of Mexico is now, is as nothing to what it is to be. It abounds with commercial elements that cannot be comprehended for their magnitude; and in proportion as it becomes the seat of maritime wealth and greatness, so, too, must it become the centre of naval strength and power. As Columbus lay sick, it was upon the waters of this sea-basin that the angel visited him in a dream, and told him that God had made his name great and sent him to "unbar the gates of ocean." The keys to these gates are at Key West and the Tortugas, Memphis and Pensacola. Nature has placed them among the wonderful resources of the great valley; and to stand as gatekeeper before them is the mission of those naval forces that naturally centre in the Gulf.

OF THE PACIFIC SEABOARD.

No American statesman will, I imagine, rest content with any plan of national defence which does not contemplate for us at least the naval supremacy in our own waters. That is the starting point—and that is the point which, in the erection of military works on the land, in the construction of floating batteries for our harbors, or in the building of ships and steamers for the sea, should be constantly kept in view. It is the true basis to work upon.

In a military point of view, California and Oregon are colonies. Far remote from the heart of the country and the strength of the nation, they are young and feeble, open to attack, and inviting to conquest. In war no relief can be sent them, however beset, unless at great risk and with an enormous expenditure of both time and money.

The voyage by sea from the Atlantic to the Pacific ports of the United States is the longest voyage in the world. Within the whole scope and range of commerce, there are no two shore-lines so remote from each other, in time, as these are.

The average passage of all the vessels which sailed from the Atlantic ports for California in 1850 was one hundred and eighty-seven days—six months. These vessels went singly, each making the best of her way without regard to the others. In a fleet, it is the dullest vessel which regulates the speed of all; the fastest must reduce canvas, yard, and stand along under easy sail, that the slow vessels may keep up.

Bound hence with a fleet for the relief of California, our ships would have to pass no less than three important naval stations, all belonging to the same power. One of them, St. Helena, is on the wayside; the two others, Bermuda and the Falkland Islands, are right in the middle of the road.

If the fleet should escape the vigilance and annoyance of the men-of-war stationed at those islands, there are still before it the storms of Cape Horn, the dangers of the sea, and the war of the elements for it to encounter and contend with.

Such would be the length of the voyage, and such the difficulties and the risks to be encountered by the way, that the practicability of sending succor to California around Cape Horn, in a war with England, may be considered out of the question.

Single ships might find their way in safety around, but as for a large fleet, covering as it goes miles in extent, and attracting the attention of the enemy with the multitude of its ships—escaping all the dangers that would beset it by the way—surely no one would count upon it, and it would be folly to expect it. California and Oregon must, therefore, rely upon the means of defence which can be sent forth from their own harbors in war; and the question is, how shall those means be provided in peace?

Shall the system of 1816, which has been tried and found too costly and defective for the Atlantic seaboard, be transferred to the Pacific, and engrafted upon its shores for another third of a century? Or shall the government resort to railroads, steam and the navy, and do for that country what has been found to answer so well for this?

The extent of our sea front on the Pacific, compared with our sea front on the Atlantic, is as eighteen to twenty-four; that is, the Pacific is three-fourths the extent of the Atlantic seaboard. To apply the system of 1816 to the former would, in my judgment, be injudicious as to policy, extravagant as to expenditure, and inadequate as to purpose; and therefore the system of 1816, excepting in so far as two or three works are concerned, should not be applied to the Pacific. We want no forts along that sea front, save only those that are neces-

sary to keep hostile ships, with their great guns, out of the reach of our cities, and to give protection to our dock yards.

There is not at this time a single dock yard upon the waters of the Pacific, belonging to any nation, at which even a frigate can be built and equipped. All the maritime powers are far removed, with their naval resources, from the eastern shores of that ocean. By establishing a dock yard there, and providing it with the means and facilities for repairing and equipping, we may, without difficulty, secure the naval supremacy upon that ocean; and once possessed, it will not be an easy matter for any power to wrest it from such hands.

The most desirable means of defence for those regions are such as we have on the Atlantic—a navy, steam, the railway and the locomotive, with their powers of concentration.

The characteristic feature which the improvements of the age have impressed upon military operations is mobility. To the degree with which armaments and armed forces are invested with locomotion and with celerity in movement, to that degree and in that ratio are they provided with the elements of power and destruction. It is its mobility, imparting toil in the field of battle, a sort of ubiquity, that makes flying artillery such a tremendous arm in modern warfare.

It is the swift foot of the armed steamer which has given her such tremendous force for battle that has appalled the most able sea captains, and left the military men of the world at variance as to the extent of her powers, so transcendent are they in the minds of all.

The part that railroads and magnetic telegraphs are to play in the great drama of war with this country has not yet been cast, much less enacted. In a military point of view, they convert whole States into compact and armed masses. They can convey forces from one section of the Union to another as quickly as re-enforcements can be marched from one part of an old-fashioned battle-field to another.

The money that is expended in the erection of a fort adds nothing to the national wealth, but the money that is spent in fortifying with railroads, while it gives the military strength required, vastly increases also the elements of national power, wealth, and greatness.

There have been expended by the States and people of the States, on this side of the Rocky mountains, about four hundred millions of dollars in building ten thousand miles of railroads and canals. These works have not only effectually provided for the common defence so far as invasion is concerned, but, besides reimbursing the projectors of them, in most cases, they have in all increased the value of the land in their vicinity, advanced trade and commerce, promoted the general welfare, and in the aggregate added not less than a thousand million of dollars to the gross sum of the national wealth.

The money that has been expended under the system of 1816 has added nothing to the value of the soil; it has afforded no facilities to commerce; it has not increased the national prosperity in any manner whatever; and, therefore, as to the alternative of providing for the defences of the Pacific coast by lining it with forts and castles, or by sending a railroad there and collecting naval means, it appears to me there is no choice, no need for deliberation, no necessity for argument.

The strongest work that stone and mortar can make, being erected at the mouth of the harbor of San Francisco, would not interrupt a blockade, nor prevent an enemy from starving California into terms. It is the navy alone that can do this; and vessels, with munitions of war sufficient for the purpose, should be placed under cover there now.

California does not produce breadstuffs enough for her own consumption, probably she never will. It is worthy of remark, that not one of our New England States, including New York, does that. Mining, commerce, and manu-

factures, rather than agriculture, will probably ever constitute the chief industrial pursuits of that distant State.

And until California has the means of deriving a support from the back country she must look for it to the sea; therefore an enemy, by taking up his position before the harbor of California in force sufficient to establish a rigid blockade, may, without striking a blow, starve the people into terms of surrender.

The greater the number of men in garrison, in such a case, and the larger the army sent there by us for its defence, the greater the distress; for the reason that they would the sooner eat out the substance of the land, and so assist the enemy in his work of starvation.

A railway to California would make that country as invulnerable and as secure from invasion as railroads have made the country on this side of the Rocky mountains; and with a railway a blockade would only annoy commerce, not starve the people.

In a consideration of the soundest policy this railway is called for. I have studied the subject, and the result of my best reflections with regard to it has led me to the opinion that the general government cannot too soon take the steps necessary and proper for procuring it to be built, and for collecting at the other end of it the nucleus of a navy, with powers of expansion sufficient to meet any probable emergency.

The vessels of our navy serving in the Pacific, instead of being brought home around Cape Horn for repairs, should be laid up in ordinary in California until sufficient numbers are gradually collected there to form this nucleus. The commerce of the country will supply the seamen for them whenever they shall be required.

My answer to your second question, viz: "What reliance could be placed on vessels-of-war, or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?" is, to a great extent, included in the answer just given to your first.

The defences upon which this country must and ought to rely are locomotive; therefore, to employ naval means to build floating batteries, which would have to be confined to the limits of the harbor, would be a waste of money, when we might, with that same money, give them wings or impart to them the breath of steam, and send them here and there wherever they would be of most avail.

The money which a floating battery would cost might keep a steamer afloat; which, with its powers of locomotion, might reduplicate itself, as it were, along the coast, by appearing successively before a number of places, and arriving at each place exactly at the right time. If the enemy would not come to the floating battery it would be of little use; but as for the steamer, if the enemy would not come to it, it could go to the enemy; it could select its own time, manner, and point of attack, and thus make up by activity, skill, and manœuvre, what it wants in strength,

The reliance to be placed on vessels of commerce for coast defences is casual and accidental; upon an emergency they might be armed and sent to sea to harass the commerce of the enemy; they might be used as transports or as fire-ships; or they might be sunk in channel-ways to block up entrances, &c., and to assist the works on shore to protect the towns. When wanted, they will be at hand; and in planning military expeditions, or preparing for defence, it is enough for our sea captains and great generals to know that the commercial marine—old hulks and new vessels—are among their means of attack and defence, and constitute an important part of the military resources which they hold in reserve—which are at all times available, and which, therefore, may be brought into play when required.

The report of the board of engineers of 1840 treats the subject of floating batteries at length. It shows conclusively that they are neither the most

efficient, effective, nor judicious shape into which the money voted for national defence may be put.

The arguments of the board upon this part of their subject appear to me conclusive; and, therefore, further remarks here with regard to floating batteries would be useless.

A prominent idea upon which the system of 1816 appears to have been founded is, that we as a naval power were to remain in hopeless inferiority; and hence the burden of the argument for a system of national defence has been "build stationary works—works that the enemy must come after; line the coasts with forts and castles to save the country from invasion, our women and children from the violence of enemies."

Railroads and steam have converted every village into a camp, every telegraph office into a watch-tower, on which is placed a sentinel more sleepless than Argus, for guarding and defending the coast from invasion. Steam, and railroads, and canals have connected every forest in the land into a timber shed for the navy, and our merchants and ship-builders have established scores of dock yards along the sea shore, and upon the banks of our rivers, at which keels may be laid and vessels launched and equipped with a rapidity that has never before been known in any age or country.

In 1836 General Cass, then Secretary of War, assumed the position, and General Jackson indorsed it,* *that for the defence of the coast the chief reliance should be on the navy; and that the system of 1816 (that of the board of engineers) comprises works which are unnecessarily large for the purposes which they have to fulfil.*

At that time steam navigation was a problem which had yet to be solved upon the ocean. Dr. Lardner had attempted it in the closet, and proved, as he said, that the conditions of the problem involved an impossibility. He therefore pronounced it an absurdity; and so men generally considered it. At that time railroads were much less complete, and far less numerous than they now are. The electric telegraph was also unknown.

Now the ocean is clouded with the smoke of sea steamers; the country is laced with lines of telegraph, and fretted with a network of railways—all tending to make reliance upon the navy still more exclusive, dependence upon the system of 1816 still more needless.

The board of engineers, to show how erroneous, in their judgment, this opinion of General Jackson was, supposed a case in 1836, and cited it again in 1840 as an illustration.

The case was well put; it produced a great effect upon the public mind; and as it is the hinge upon which the continuation of the present system was made to turn, I beg leave to quote the case now, that we may see how it will stand the test of the new condition of things; how the improvements that have since taken place will affect it, and how far it may be modified by the ground I have been endeavoring to make good.

"In the report," says the board of 1840,† presented by the engineer department in March, 1836, (Senate Document, 1st session 24th Congress, vol. 4, No. 293) "there is a *demonstration* of the actual economy that will result from an efficient system of sea-coast defence; which is to the following effect, referring to the document itself for detail.:

"There is first supposed to be an expedition of twenty thousand men at Bermuda or Halifax ready to fall upon the coast. This will make it necessary, if there be no fortifications, to have ready a force at least equal at each of the following points, namely: 1st, Portsmouth and navy yard; 2d, Boston and navy

* See page 5, No. 206 H. Doc., 1st session 26th Congress. See also page 1, No. 293 S. Doc., 1st session 24th Congress.

† Page 70, No. 206 H. Doc., 1st session 26th Congress.

yard; 3d, Narraganset roads; 4th, New York and navy yard; 5th, Philadelphia and navy yard; 6th, Baltimore; 7th, Norfolk and navy yard; 8th, Charleston, South Carolina; 9th, Savannah; and 10th, New Orleans, to say nothing of other important places.

"At each of these places, except the last, ten thousand men drawn from the interior, and kept under pay, will suffice, the vicinity being relied on to supply the remainder. At New Orleans, seventeen thousand men must be drawn from a distance. In a campaign of six months, the whole force will cost at least \$26,750,000.

"The garrisons necessary to be kept under pay for the fortifications in these places will cost for the same time \$8,430,500. The difference (\$18,319,500) will then be only \$3,448,150 less than the whole expense of building these defences, viz: \$21,767,656; whence it follows that the expense of these erections would be nearly compensated by the saving they would cause in a single campaign."

This is the *demonstration*, first given in 1836, and repeated in 1840, to prove the very great economy and complete efficiency of the system of 1816; and in order to complete this demonstration, it was required that twenty-one millions of money and upwards should be first given to fortify only ten places along a sea front of two thousand five hundred* miles in extent; for there were "other important places," of which nothing was to be said.

Now let us suppose that, in conformity with the modifications which I have suggested, and according to the idea of maintaining such a system of national defence *that will secure to us the naval supremacy in our own waters*, a portion of this \$8,430,500 which the plan of the board requires to keep for six months *only* the "necessary garrisons" in the powerful works which are supposed to be erected at each one of the ten threatened places. Let us suppose, I say, that, according to the proposed modifications of the system, a part of this eight and a half millions had been applied to the building of some twenty or twenty-five men-of-war steamers, such a force of steamers would be required, even under the system of the engineers, to serve as a coast guard in war, to brush from the *outside* of our harbors, which are protected on the *inside* by forts, any blockading ships that the enemy may station there, and to keep straggling cruisers from capturing and plundering our merchantmen in the sight of these same forts, and along our shores generally.

To keep up the proposed garrisons for one year at the ten threatened places *only*, would require, according to the estimate of the board of engineers themselves, \$16,861,000.

The steamers will last many years; and according to the estimate of the navy board,† made at the same time, would cost, for the twenty-five, \$5,625,000, or only about one-third of the actual cost of the garrisons for ~~one~~ year, after the forts were built at a cost of \$21,767,656.‡

These twenty-five steamers would be stationed along the coast, and distributed, we may suppose, in the following manner, viz: two with their headquarters at Portsmouth, three at Boston, four at New York, two at Charleston, two at Pensacola, and two at the Balize.

The case put supposes it to be known that this expedition of twenty thousand men, who are about to invade a country of more than twenty millions, has rendezvoused at Halifax or Bermuda, suppose it to be at Halifax.

Two or three of these twenty-five smart, active steamers are sent to watch the enemy's movements. As soon as he puts to sea and takes his departure, one of them makes for the nearest post on our coast, and there delivers to the

* See Engineer's (Col. Totten's) Report, 1840.

† Page 83, No. 293, Senate Doc., 1st session 24th Congress.

‡ Page 70, No. 293, Senate Doc., 1st session 24th Congress.

magnetic telegraph the intelligence that the enemy has put to sea, and is steering, with his expedition of twenty thousand strong, towards Charleston. The effect is electrical; instantly bodies of armed men heeding the summons would spring up, not from bush and brake, in a single glen, as at the sound of Roderick Dhu's whistle, but from every town and hamlet, mountain side and valley in the land. Harnessing up the iron war-horse, they would hold him, panting on the railway, ready at the word to speed off with them for the appointed place, at the rate of thirty, forty, or fifty miles the hour, according to the emergency.

In the meantime, and without confusion, message is sent by lightning for the look-out steamers and naval forces in the Gulf to proceed towards Savannah, and for those at the north to steer south and look into the Chesapeake for further orders. Or they may be directed to cross the enemy's hause and bring him to action, or cut off his stragglers, or otherwise harass and annoy him.

At the end of three or four days, or it may be a week or more, according to the weather, and the great variety of circumstances that tend to retard the movements of such a force at sea, another of the guarda costa steamers puts into the capes of the Delaware or elsewhere, with the certain intelligence that the enemy is bound for Charleston. Because his rate of sailing is regulated by the speed of the slowest vessel in the fleet, he is yet three days from Charleston at the least.

All our ships-of-war that have returned from cruises, that are just fitting out, or that may happen to be in port, together with the whole coast guard of twenty-five steamers which, at the commencement of the war, were found on hand, may thus appear off Charleston as soon as he: certainly they would be there before he could disembark. And should he be so infatuated as to attempt a landing, it would be practicable for us to have there, in force ready to receive him, an army, with a regiment even of *foot*, from every State in the Union, except perhaps California and Oregon.

Is it possible that an enemy could be tempted by any inducement whatever to land in such a country, provided with such means of defence, invested with such armed ubiquity, and such powers of concentration?

Fort Moultrie, which has beleaguered an enemy before, and has demonstrated that it can hold a force from sea in check long enough at least for the lightning to go for help, and for steam to come with it, is there to beleaguer him again; and our coast fleet, which we have supposed to be assembled there as a witness to this hypothetical attempt at invasion, would be ready at the bar to receive this discomfited and crippled foe as he attempted to escape. Great would be the disappointment to the country if such a fleet should fail to give an account of such an enemy.

The present system of fortifications seems to have been planned upon the idea that in all wars this country was to stand on the *defensive*, and that all the energies of the enemy would be directed to siege and invasion.

But in the death struggle, what have we to fear from invasion? There is no pillar nor post in this country which, like the Paris of France, when it falls, carries the whole political edifice with it. There is no Paris in America. Unlike Europe, the armed occupation of a capital here would be no more than the occupation of any other town by an enemy; unlike Europe, there are no disaffected people in this country for a foe to tamper with. The government is by the people, for the people, and with the people. It is the people. And as for invasion, there would be neither danger to the country, nor its government, nor its institutions. Our free institutions are our best fortifications to protect the country from siege, and the land from invasion. Captivating the minds of his soldiers, the civil and political freedom enjoyed by all in these United States would convert the rank and file of an invading foe into friends. An enemy planting his foot upon our soil could at best hold no more of it than that upon which he actually stands and covers with his guns. If he attempted to move,

in whatever direction he should take up the line of march, the people in front he would find enemies, and those that he left behind, emboldened by his own deserters, would rise up in arms against him the moment his presence was withdrawn from them.

What attempts at invasion did England make during the last war? She was afraid of desertion and the propagandism of republican institutions then. It is true, she made a foray upon Washington, but found a precipitate retreat necessary, and that foray was as barren and empty of military result as a cloud without water. She attempted New Orleans, but there she encountered one of those sand-bag or cotton-bag forts, and her hosts fell before it.

In the war of 1812 we were young and feeble; England was at the summit of her power. The difference between the military condition of the two countries was immense; yet upon what point along the seaboard did she attempt invasion? Against what battery did she lay siege? If in the defenceless state of the country then—a country that had a navy to build, that had yet to plan its system of fortifications, to concentrate means of defence—if, under those circumstances, sieges were not laid nor invasion attempted at any point along an open sea front, with its indentations and windings of six thousand miles—if but with one-third of our present population—if with not one-tenth part of our present military resources, nor not the twentieth of our present powers of concentration, siege and invasion were not attempted then by a most haughty and proud foe, is it likely that in case of war now, when she looks upon us as her equal, and at least as her match in everything except in the number of “wooden walls”—is it probable or possible that, with such a power for an enemy now, anything like siege or invasion from the sea would be attempted or thought of?

With a home squadron comprised chiefly of steamers, it would be difficult to conceive how an enemy should so threaten as to make it necessary to establish a garrison of 17,000 or even 10,000 men for six months at Charleston or any one of the ten places named in the report.

The operations of these twenty-five steamers would be mostly confined to our own waters in war, for with want of depots of coal abroad they would be required to return into port at the end of every two or three weeks at least for a fresh supply of fuel.

Now bearing in mind my answer to your first question, and always supposing that one of the principal features in the system of national defence hereafter to be provided for this country is *naval supremacy for it in its own waters*, my answer to your second question is, with the modifications already proposed, that all *needful* “reliance” for coast defence can be placed on vessels-of-war and of commerce, upon open shore batteries, steam, railroads, and telegraph, *OUR FREE INSTITUTIONS*, and such like “substitutes for permanent fortifications.”

In reply to your third and last question, as to the expediency of *continuing* the present system of fortifications on the shores of the northern lakes, I have to remark that, in my judgment, it is neither necessary nor expedient so to do.

As for *invasion* from that quarter, the difference in political condition between Canada and the United States is an ample fortification for us.

Large bodies of the people there now are known to be in favor either of separation from the mother country or of annexation to the United States.

An American army, therefore, going over into Canada in a war with England would be looked upon by a large number of the people there as friends and deliverers, not as enemies and oppressors.

The last war on the waters of the lakes was a war of ship-building.

He who could muster the strongest naval forces there—and there they had to be created—had the supremacy. And if, in case of war now, England should succeed in getting ahead of us with her naval forces on the lakes she could inflict great injury. A few days of uninterrupted control there by a few armed vessels, insignificant altogether as to absolute force, would make dreadful havoc

upon our lake shipping, our lake commerce, and our lake towns, if no precautions were taken to guard against it.

The commerce of the lakes will soon be worth to us as much or more than the commerce of the Atlantic.

During the season of lake navigation there is put afloat upon those waters every week, on the average, millions of American property, besides vessels and the lives of American citizens.

In no part of the world, except in the offings and harbors of the great commercial emporiums, is there to be found such a concentration of merchandise afloat. Nor is there, in case of our naval inferiority upon the lakes, any part of the world that affords such an abundant harvest of prizes to tempt the cupidity of seamen.

It is the policy of this country never to be the aggressor; it loves peace and hates war, and therefore it is not likely ever to be the party to strike the first blow in war. That is an advantage at which Great Britain generally aims, and that she fully understands and appreciates the importance of striking quickly upon the lakes in case of war with this country we have evidence conclusive.

Before she sent her minister plenipotentiary here with his ultimatum, when the friendly relations between the two countries a few years ago seemed to be so much in danger, she first assembled a fleet of fifty-odd sail in our waters, and upon our frontiers one-third of the whole British army, notwithstanding that she was at that time engaged in two distant and expensive foreign wars.

No one who, calling to mind those times, will examine her military journals of that day can fail to be impressed with the fact that her forces were especially arranged with a view to Canada and the lakes, and that there the first blow, or a blow synchronous with the first, was to be struck. Her intentions then were too manifest to be forgotten or disregarded even now.

It is true the war might commence during the season when the navigation of the lakes is annually closed, and when, consequently, all naval forces would be tied up. In that case we should have nothing to fear. But it might commence in the height of the commercial season; and the war might be commenced on her part by first admitting from the sea a fleet of small-class vessels, passing them up through the Canadian ship-canals into the lakes, and there letting the declaration of her intentions consist in an attack upon Buffalo, Chicago, and other lake towns with their shipping.

These interests are too valuable and important to be left at the mercy of an enemy even for a day. Therefore it would be advisable, so long as Canada is an English colony, to provide against a naval surprise on the lakes.

For this purpose it is only necessary to look to the means of assembling quickly a small naval force on the lakes, and, in the meantime, to place at the several cities and towns, and at the termini of the various railroads and canals along the lake shores, a few pieces of ordnance, according to the plan suggested for the towns generally along the Atlantic seaboard.

The forts which are already on the lakes need not be garrisoned in war only until we acquire the naval supremacy there.

We have canals and railroads by which we could send the frames of vessels and all requisite naval means to the lakes at short notice and in time to re-enforce what we might suddenly assemble there.

It seems, therefore, that, acting upon the policy of so shaping our system of national defence as to secure the naval supremacy in our own waters, we should proceed to build the engines, provide the armaments, and get out at the navy yards of Memphis and New York the frames of a few small men-of-war steamers for the lakes. The engines and the armaments might be placed upon the lake shores at once. The frames, on the first appearance of the war cloud, could be sent there by the Erie and the Michigan canals, put together, and be ready for launching at a moment's warning.

The Mediterranean is an inland sea, so are our lakes and rivers. Eminently continental in its proportions and maritime in its features, our country looks out upon blue water to the east, the south, and the west; the ocean front of the United States alone is greater in extent than the ocean front of the whole of Europe. Therefore, like action to the orator, a navy to us is the first, second, and third chief requisite to any effective system of national defence.

Respectfully, &c.,

M. F. MAURY,
Lieutenant United States Navy.

Hon. CHARLES M. CONRAD,
Secretary of War.

No. 7.

Report of Lieutenant J. A. Dahlgren.

ORDNANCE OFFICE, UNITED STATES NAVY YARD,
Washington, September, 1851.

SIR: I had the honor to receive a communication from the honorable Secretary of the Navy, enclosing certain queries from yourself in relation to the defences of the United States coast, with directions to "give to the subject my best reflections, and communicate the result to the Secretary of War." I have complied with the directions of the honorable Secretary of the Navy, as far as permitted by the limited time allowed for the purpose, and now beg leave, very respectfully, to lay before you such facts and opinions as have a bearing on the subject-matter of the queries proposed.

Query 1.—To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war, the invention or improvement of projectiles, or other changes that have taken place since it was adopted in the year 1816?

Shells projected horizontally from cannon are most destructive agents when used against shipping, but are not so efficacious against the masonry of regular works as shot, though in entering an embrasure and bursting they might do considerable mischief.

So far, therefore, as casemated batteries are concerned, shells have added very little to the power of ships; but against guns *en barbette* they will be found of material assistance, especially if charged with balls and used as shrapnel. And against open works, the concentration afforded by the well-served broadsides of one or more ships, should suffice to silence the works, if the vessels have no unusual disadvantages to encounter, and are brought within sure distance.

On the other hand, shells are exceedingly destructive to vessels if exploded in their sides; but as land works already possess, in shot, especially when heated, superabundant means for destroying ships that will expose themselves long enough to their fire, it may, on the whole, be deemed fairly doubtful whether, in a general view, the introduction of shells has materially altered the relations of fort and ship when opposed to each other.

If the question between them were merely the relative capacity, so far as attack and defence were concerned, there would be no difficulty in solving it. But in the great majority of cases, where the sea defences of the United States are concerned, the true question is in regard to the capacity of ships to endure the fire of forts *long* enough to pass them without so much injury as to interfere with the subsequent operations.

And it is on this account that the application of steam is to be considered as

materially affecting the power of forts. For whether it be used as a chief motive power or as an auxiliary, it gives great facility in concentrating and appearing suddenly on given points, and in assuring a certain and rapid transit when required to pass the fire of a fort.

In the defence of nearly every one of the large commercial cities, it will be observed that the chief reliance to prevent the approach of an enemy is by fortifying some approach to it; the naval question merely touches the practicability of *passing* the fire of these works, and not of sustaining it *any longer* than may be necessary in the most rapid movement that the ship is capable of.

To illustrate this practically let us turn to the mode proposed in the engineer's report* for excluding an enemy from the lower bay of New York by a fort on Sandy Hook, with floating batteries and bomb ketches inside.

The ordnance commonly mounted in the coast fortifications are 32-pounders, 42-pounders, and eight-inch howitzers. The effective fire of the 32-pounder can hardly be said to extend beyond a mile where heavy ships are concerned.

At that distance the penetration will not exceed fourteen inches when the shot strikes the surface fairly and directly. If the impact be oblique or on ricochet, the penetration is decreased accordingly. The effect of the fire is further decreased by the unavoidable deviation of shot at the distance of a mile, and by the movement of the object which is changing its position in direction and distance. It would be difficult to estimate correctly the number of shot which would have a maximum penetration under these circumstances, but perhaps not more than one in ten. The forty-two pounder and army eight-inch howitzer will not vary this capacity considerably, and it seems reasonable to assume that, if the distance be greater than a mile no material injury will be experienced from such pieces by a heavy ship when under way.

The sketch annexed represents the localities in question as given by the chart of the Coast Survey. The track at mean low water allowed to the heaviest steamer† is shown by the coloring.

The effective fire for the proposed fort as indicated by the circle, evidently covers no considerable part of the passage, and if a steamer chose to take the main channel she would, by keeping its extreme right, be under fire about six or seven minutes, and never approach the guns of the fort nearer than fourteen hundred yards, thus rendering the chances of any damage exceedingly slight. But the swash channel offers sufficient depth for her draught, and by using it the steamer would pass entirely out of reach of the fort. The sole reliance, then, to exclude the fleet becomes the floating batteries and bomb ketches; whether they may be trusted or not will be considered subsequently; the present object is merely to inquire if the fort has the power of itself to exclude shipping.

It seems evident, therefore, that while it is very doubtful whether forts have gained any advantage from the use of shells, it is certain their efficacy has been considerably diminished by the application of steam to the vessels-of-war, which by their decreased draught are enabled to enter channels not accessible to ships-of-the-line, and when obliged to pass the fire of permanent works are enabled to do so in so little time as hardly to afford the batteries an opportunity to effect any essential damage.

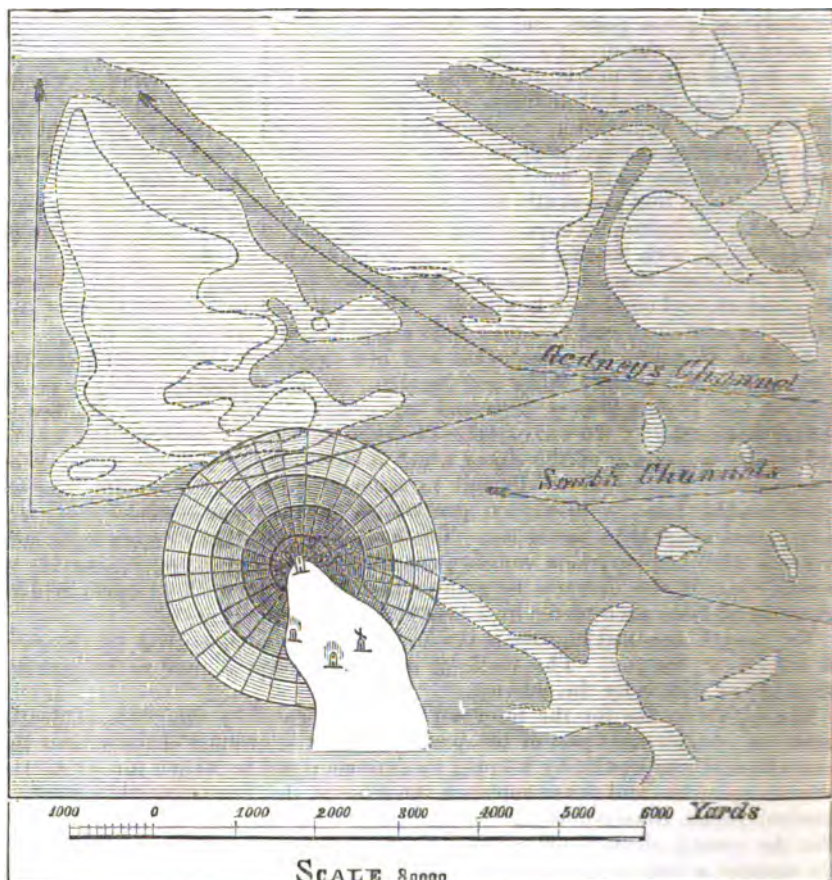
Query 2.—What reliance could be placed on vessels of war or of commerce, floating batteries, gunboats, and other temporary substitutes for permanent fortifications?

In proceeding to answer this query, I find the ground already occupied by certain propositions contained in an official document drawn up in 1840 in relation to the defences of the coast. The source from which these views emanate and their official character entitle them to full consideration, so that I do not

* To War Department, 1840.

† Susquehanna, full loaded, draws nineteen feet eleven inches.

Sketch of Hook with fort—Its fire and channel way.



The effective fire of the fort is shown by the circle.

feel at liberty to disregard them in treating the question proposed, and it becomes imperative to scrutinize them; because, if correct, they not only establish what they were designed to prove, the unfitness of naval forces for protecting the coast, but also their utter unfitness for any purpose whatever, which it is presumed was not contemplated.

The passages referred to are as follows :

* * * "Even should all these, in the form we have presented them, be objected to, we may still challenge opposition to the following broad propositions, namely :

"*First.* If the sea-coast is to be defended by naval means exclusively, the defensive force at each point deemed worthy of protection must be at least equal in power to the attacking force.

"*Second.* As, from the nature of the case, there can be no reason for expecting an attack on one of these points rather than another, and no time for transferring our state of preparation from one to another after an attack has been declared, each of them must have assigned to it the requisite means ; and,

"*Third.* Consequently, this system demands a power and defence as many times greater than that in the attack as there are points to be covered."

To the first proposition there lies a reasonable demurrer, because, under the circumstances likely to attend the defence of any harbor or roadstead which is approached by a channel, great disadvantage must accompany the attempt, particularly when the passage lies among the shoals, of which there is no indication, save by artificial marks or the lead. Where the movements of ships are only limited by bold shores there can be little embarrassment in keeping them from danger; but where the keenest eye can detect nothing on the surface of the water to give warning of the risk, and a slight error in the course or a tide-eddy may ground a ship directly under fire, it is evident that the attention requisite to clear these obstacles successfully will prevent the officers of a fleet from giving full directions to its offensive powers, though at the very time the opposing ship may be concentrating a deliberate and destructive fire on the leading ship attempting to enter, or the assailants may be compelled by wind and weather to postpone essaying the entrance, even under these disadvantages; while thus detained he must be exposed to the severe gales and to much damage, a consideration not to be overlooked on our coast, even in the summer months. In 1778 the English and French fleets, then off Rhode Island, were separated from each other while manœuvring for the weather gauge during the month of August, and many of the heaviest ships dismasted on both sides.

On the other hand, the defending force, fully cognizant of the difficulties which await the enemy, either take such position at anchor, or under way with steam or sail, as will be best suited to annoy the enemy when most occupied in clearing the intricacies of unknown shoals, and increase the danger by concentrating a deliberate fire at a moment critical not only to the vessel most exposed to it, but to those which follow and are liable to be thrown into disorder by the least mishap.

Be it remembered that this capacity of transferring the power of its armament from one point to another is the essential quality in the present case which the fort does not possess.

Under such circumstances the most cool and brave are apt to hasten too much, naturally desiring to shorten the time of inaction, and to make some return to the fire of the enemy; hence the liability to lose the services of one or more ships in the moment of greatest need.

Well known instances of this may be cited. While standing in to attack the French at the Nile, Nelson lost the use of the *Culloden*, 74, which grounded on a shoal, though not even under fire at the time, and remained there useless during the whole action. At Copenhagen three of his line grounded on a shoal—the *Agamemnon*, 74, the *Russell*, 74, and *Bellona*, 74; and, in leaving their anchors during the suspension of hostilities, the *Defiance* and Nelson's own ship, the *Elephant*, with several others, grounded under the guns of the Three-Crown battery.

The defending force has, moreover, the advantage, if anchored, of being able to post some guns ashore so as to enfilade vessels taking the direction of its own line, and also prevent the weather ships from being doubled on by the enemy.

Every naval man will comprehend the difficulties of navigating a fleet of heavy ships along channels skirted closely by shoals and commanded throughout their extent by the guns of an enemy's line; and the advantages, on the other side, of being able deliberately to rake ships approaching in that way will be very apparent.

Among the events of the revolution may be found an apt illustration of this: In 1778 a large force was despatched from France with the view of surprising the English fleet in the Delaware. Philadelphia had been evacuated, however. The Count de Estaing followed to New York, and appeared off that harbor about the 10th of July. Lord Howe was by no means prepared for his arrival, but, nevertheless, he proceeded with energy and judgment to defend the entrance with a force vastly inferior to that of the enemy.

The French admiral, after deliberating some ten days, finally declined to attack, and on the 22d of July departed on another expedition.

On this occasion there were strong motives for bringing the English fleet to action. Their army now occupied no other of the large cities than New York. The recent evacuation of Philadelphia was not calculated to encourage the hopes of the royalists, and if "the men-of-war were defeated at this time, the fleet of transports and victuallers must have been destroyed, and the army of course fallen with them."—(Eakin, page 77.) The re-enforcements, too, arriving to succor the fleet, would have been cut off in detail. The consequence might have been immediately fatal to the hopes of the British, though favorable to the cause of humanity, by terminating a struggle which endured four years subsequently.

The difference in force seemed sufficient to justify an engagement under any circumstances. The French had twelve ships of the line, carrying eight hundred and seventy-six guns. The English only nine ships that could be brought into line, and these mounting five hundred and thirty-four guns. The disparity was even greater than that expressed by these figures, as the French carried their guns in ships far superior in size and strength to those of the British.

The main channel which the French were obliged to make use of was thus defended by Lord Howe: Five ships of fifty-four guns and one of fifty were anchored in line bearing about W.N.W. from the easternmost vessel that lay near to a storeship which was armed with some guns, and anchored close in with the Hook. A battery of two howitzers and another of three 18-pounders were posted on the shore close to the weather-ship to prevent that end from being doubled on, and four regiments landed on the Hook to repel any attempt of the French to disembark troops and destroy the batteries. Three ships were placed near the bar to embarrass the passage, and a sixty-four, with frigates, lay inside of the line to be used as occasion might require.

When the French had passed the bar in sufficient force, the three ships were to retire and take the rear of the line, "which would bring their broadsides to bear upon the direct line of approach in the narrowest part of it, when, by veering again, they would resume their situations, and continue to command the long line of course which the enemy must pursue as he advances, while the smaller vessels were so placed as to harass and distress him from inaccessible positions."—(Eakin, page 86.)

The plan of defence was well conceived, and would no doubt have been carefully executed.

The French admiral declined to attack under these circumstances, and in all probability would have suffered great damage, if not defeat, if he had made the attempt.

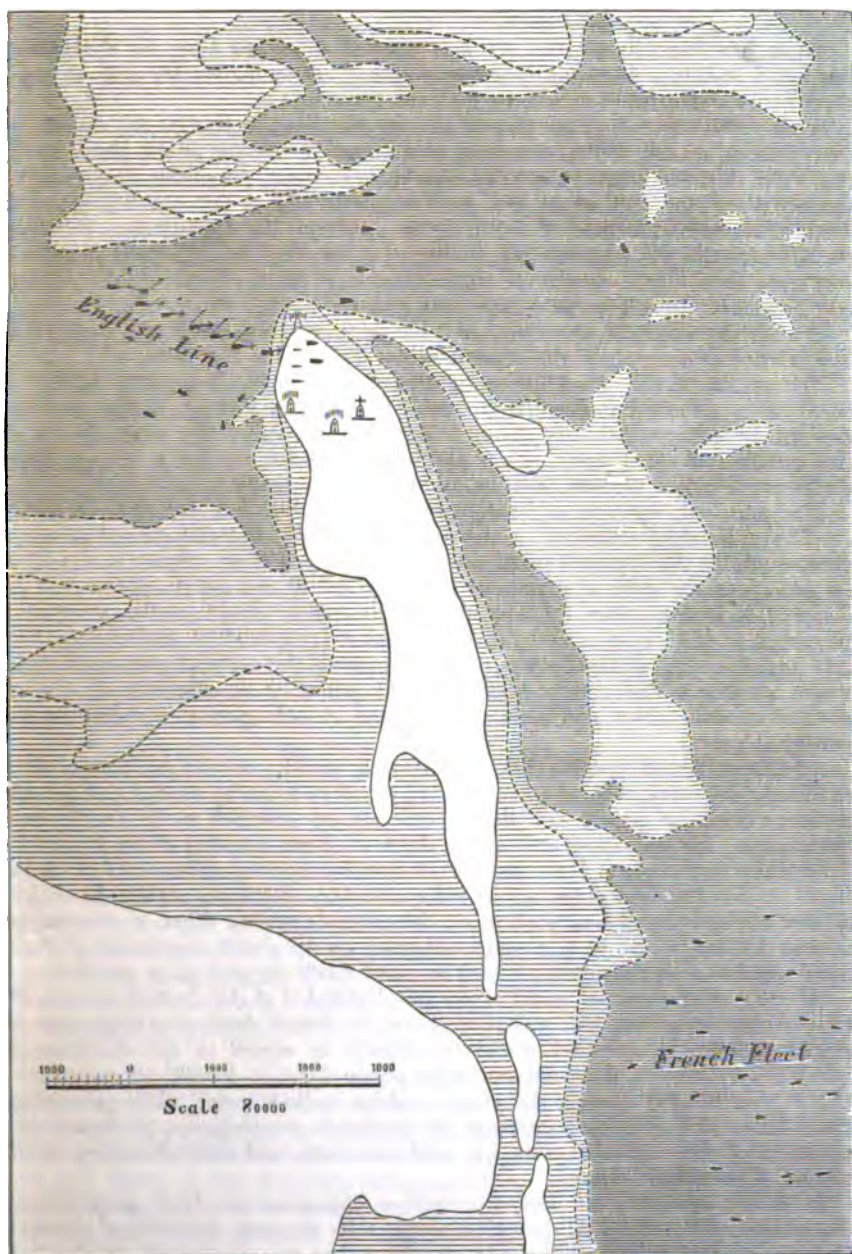
The superiority which a naval force derived from its mobility over the strongest works is very apparent in this case.

The French ships could not even pass the bar at leisure; they would have been under fire from the first in venturing to do so, and be exposed to a raking fire in approaching the British line, which they were not even at liberty to pass as they could have done, if threatened by the fire of a fort only, but would have been obliged to engage and to destroy it as an indispensable preliminary to any further operations.

Touching the second proposition, it may be said that there is no doubt now of the time that will be required to carry intelligence from any one point to another, nor of that which may be needed to transfer aid from point to point along the seaboard.

The appearance of an enemy, his force, and movements, may be known at New Orleans almost instantly after it is known at Boston, and at any point between these cities; and whatever steam force may have been posted at the principal entrances can be transferred from one of them to another at a reliable

Defence of New York harbor, by Lord Howe, against the French fleet, July, 1778.



rate of speed. Ten knots per hour is not excessive for a good ocean steamer in any weather in which an enemy would be likely to operate in a matter so delicate as forcing a disputed channel.

The question, therefore, is not whether the inferior force stationed at a port may be able to make good a final defence against an enemy appearing suddenly, but whether it may have the power to delay his movements until aid shall arrive from another quarter.

Thus, in thirteen hours after the first sight of an enemy from the Neversink heights, a squadron from the Delaware would be off Sandy Hook; and twenty-eight hours would bring up a force from the Chesapeake.

If the hostile fleet shall not be able to pass the channel, destroy the squadron that defends it, and still be in a state to attempt the passage of the Narrows in less than thirteen hours, it is very certain that a fresh squadron, even though somewhat inferior, will afford him good reason to look to his own defence, and think of retreating, instead of venturing to prosecute his operations. Finally, the Chesapeake vessels, arriving in fifteen hours after the Delaware steamers, will give more than a chance for capturing at least every steamer of the enemy that has been crippled in the engagement with the New York squadron.

The means requisite, therefore, at each port, are those that will insure the time needed to concentrate the other portions of the home squadron.

The result of the preceding propositions, as announced in the third, has received its practical application in a preceding passage,* thus: "The preparation by the enemy of twenty steam frigates would require the construction of two hundred of equal force on our part, supposing that we design to cover but ten of our principal harbors, leaving all others at his mercy."

The principal objection to the defensive position thus assumed to be imposed on the two hundred steamers, by the necessities of the first and second propositions, would be the impossibility of carrying it into execution. There is certainly no precedent for such a system of inaction; and if any naval officer were so disposed, it is more than probable that public opinion would hardly permit the precedent to occur here. Novel it would be to see two hundred steamers divided into squadrons at distant points, quietly awaiting the onset of one-tenth their whole number. The enemy himself would probably be alarmed at such a peculiar demonstration, and rather be inclined to look upon it as a trap for his twenty ships.

Admitting, for an instant, that any necessity could exist for pursuing a plan so strictly defensive in its character, would it not be better to send the ships out to sea, where the public attention would not be enforced to the humiliating character of the operation, and cause them to form a cordon along the coast, from Maine to Florida? This distance of fourteen hundred miles could be easily lined by two hundred ships, seven miles asunder; and being within the notice of any unusual signal from each other, the enemy's twenty ships, in attempting to pass the line, would be seen and overhauled by the ready concentration of an equal number from the cordon, before he could reach the port to be assailed.

Be that as it may, no naval officer can doubt that if the United States had fully available two hundred war-steamers of the largest class, or sailing ships of equal tonnage, the question would be entirely in regard to the character of *offensive operations*. It would no longer be an object to defend our own ports, but to capture and destroy the enemy's ships in distant seas, while protecting his colonies and trade—to intercept his commerce everywhere—to dispute the command of the high seas with his mightiest fleets, and blockade every naval station of his island empire.

It is not necessary to prosecute further objections to these propositions. Naval men, with hardly an exception, would take the very converse of the first and second propositions, and utterly protest against the consequent contained in the third. Stronger reasons have yet to be adduced to make good the position that defence by means exclusively naval is impracticable, *for the reasons given in these three propositions.*

The practical interpretation of the second query, however, has no reference to the question of an exclusive defence by the forts or ships, so far as the Atlantic coast is concerned, if I understand rightly. The answer must necessarily be based upon the existing state of things; and as a great part of the contemplated system of coast fortification has been completed, the expediency of substituting ships, &c., has reference only to such of the system as remains unfinished.

The works for the protection of Boston and of the navy yard at Norfolk are already completed. At New York, likewise, excepting the fort on Sandy Hook. The approach to Philadelphia, however, and the anchorage at the breakwater are yet undefended, though the works have been planned and perhaps partly appropriated for.

I have no doubt when these places, and some harbor on the southeast coast, have received whatever aid can be furnished by the art of the engineer, that a naval force of no immoderate extent will be fully competent to defend the Atlantic seacoast from any attempts which an enemy would find it advisable to make.

Under no circumstances, except of the most unquestionable superiority at sea, is it presumed that it would be well to resort to a defence exclusively naval.

The ship and the fort have each a particular province in every general system of well regulated national defence, and if these can be agreed on the result will be reliable and economical. I do not mean to apply the latter word to the least possible outlay of means, but to the judicious expenditure of whatever may be required to effect the end proposed.

It is not needful here to enter into any statement of the part properly allotted to forts; this has been ably and frequently expounded by the chief engineer.

Admitting them fully, and the necessity also for the works in the principal points above alluded to, as the base for the naval operations that are to guard the intermediate points, it may be well to examine whether even the great harbors and watercourses are fully defensible by fortifications, when of the most extensive character.

Let us again revert to the defences of New York.

The first object is to prevent the occupation of the lower harbor by a hostile fleet, for if able to effect this the enemy would obtain the following advantages, according to the report of the board of engineers, (page 54:)

"An enemy's squadron being in the bay, into which entrance is very easy, would set a seal upon this outlet of the harbor. Not a vessel could enter or depart at any season of the year. And it would also intercept the water communication, by way of the Raritan, between New York and Philadelphia.

"The same squadron could land a force on the beach of Gravesend bay, (the place of the landing of the British, which brought on the battle of Long Island, in the revolutionary war,) within seven miles of the city of Brooklyn, of its commanding heights, and of the navy yard, with no intervening obstacle of any sort.

"This danger is imminent, and it would not fail, in the event of war, to be as fully realized as it was during the last war, when, on the rumor of an expedition being in preparation in England, 27,000 militia were assembled to cover the city from an attack of this sort. It is apparent that the defences near the city and those of the Narrows, indispensable as they are for other purposes, cannot be made to prevent this enterprise."

There can be no doubt of the great damage that would be wrought to the revenue of the government, and to the immense interests of various sections, by the presence of an enemy's force in the lower harbor. A heavy expenditure would be well laid out in establishing the means of prevention, and this should certainly be looked to in time.

What fortifications, then, can be applied to the purpose, and how far will they be efficacious in excluding a fleet?

A glance at the chart will show a wide extent of water between the outer extremes of land that form the harbor from Sandy Hook to Coney island; the distance is about seven miles. Large ships, however, are not at liberty to pass over any part of this entrance. Their course is confined to two channels, the principal one of which is near the Hook, and another somewhat to the northward of it, (the swash.) Line-of-battle ships can use the first only, but the heaviest steam frigate in our service, when loaded for a long cruise, only draws twenty feet, (the Susquichanna,) and therefore has sufficient water to pass in by the swash channel.

According to their report the board of engineers propose to *fortify the east branch and middle ground*, under the belief that the bottom was sufficiently permanent to receive such works. Recent surveys, however, have so far shaken such opinion as to induce them to forego the project.

The report goes on to state, (page 55:) "This may, however, be said with certainty, namely: that, all other means failing, works may be erected on Sandy Hook which will have a good action upon the channel, and under cover of which bomb ketches or steam batteries, or both, may lie. With such an arrangement there would be little probability of the lower bay being occupied as a blockading station."

I have already endeavored to make it apparent that any works on the Hook would, of themselves, be insufficient to prevent the passage of ships into the lower harbor, and it will be perceived that this is also fairly inferable from the passage just quoted, as it includes other aid in the arrangement designed to prevent the occupation of the lower harbor.

Line-of-battle ships, in taking the main channel, would, however, sustain the fire of a fort without material detriment for the eight or ten minutes required to pass it, with a fair wind and tide; and, if annoyed by the floating batteries and ketches, would not hesitate to run close to them and brush them with a few broadsides, which would probably leave them little more to do than to take care of themselves.

The heaviest steamers, by taking the swash channel, would avoid the fire of the fort and floating batteries altogether, and afterward have leisure to destroy the latter from the anchorage of the lower harbor.

So far, therefore, from believing that, "with such an arrangement, there would be little probability of the lower bay being occupied as a blockading station," it seems conclusive that the occupation of the lower harbor by a naval force would be liable to the least degree of interruption from the defences planned for that purpose. The report itself admits the necessity of using floating batteries and bomb ketches as auxiliaries, which, of all the naval means, are certainly the least worthy of reliance. With the limited preventive powers of a fort, so far as passage is concerned, they have in no degree the least of its capacity to endure battering, their material being as vulnerable as that of a ship, without its great advantage of passing from one point to another, whether far or near. And as for bomb ketches against objects no larger than ships, and those in rapid motion, it may be said that the chances of even a single bomb dropping upon them are too remote to be taken into account as a means of defence in the conditions of this case.

Conceiving, therefore, the entrance of an enemy into the lower harbor to be fairly feasible, the next matter for consideration is the capacity of the inner defences to prevent entrance into the upper harbor and the destruction of such means of war and revenue as may be found in and about the city, such as the vessels-of-war built or building at the navy yard, of the timber, ordnance, and stores, and, above all, of the extensive private establishments for manufacturing steam-engines; a purpose which, if effected, would cripple the nation in every

enterprise of offence and defence, and probably could not be remedied in the course of a war.

The levying of contributions might not be disregarded where means so ample were placed by the chances of war within the grasp of an invader. These objects individually are sufficient to warrant a military attempt on a large scale.

The number and character of the works arranged by the engineers are best set forth in the language of the "Report," page 54:

"At the Narrows, about seven miles below the city, the passage becomes so contracted as to permit good disposition to be made for defence. On the Long Island side of the Narrows is Fort Lafayette, which is a strong water battery, standing on a reef at some distance from the shore; and immediately behind it, on the top of the bank, is a small but strong work called Fort Hamilton. Some repairs being applied to these works, this position may be regarded as well occupied.

"On the west side or Staten Island side of the Narrows are the following works belonging to the State of New York, viz: Fort Richmond, which is a water battery; Battery Hudson, which is at some height above the water; Battery Morton, which is a small battery on the top of the hill; and Fort Tompkins, which is also on the top of the hill, and is the principal work. All these need great repairs, but, being once in proper order, would afford a very important contribution to the defence of the passage, nothing further indeed being contemplated for this position except the construction of a small redoubt on a commanding hill a little to the southwest. The repairs of these works cannot too soon be taken in hand, and it is hoped some arrangements may soon be made with the State authorities to that end.

"With the Narrows thus defended, and the works near the city in perfect order, New York might be regarded as pretty well protected against any attack by water through this passage."

That these works are themselves perfectly capable of resisting the attack of any fleet there is no doubt, but that they are able to interdict the passage to a like naval force is very far from being certain; on the contrary, the chances of passing, without suffering to any material extent, are reasonable enough to warrant the attempt in view of the great results to be derived therefrom.

The distance between the nearest batteries is seventeen hundred yards. The water is deep to the very shore of Staten Island, and the edge of the reef well marked, on the Long Island side, by the water battery. The largest ship, therefore, may choose the course likely to be most advantageous in receiving the least weight of metal.

If the officer in command run mid-channel he will be under the fire of both sides at a most effective distance (eight hundred yards) when right abreast of them, but by taking one side or the other he will recede from one fire, and in approaching the other be exposed to no great increase of effect.

Suppose he choose to keep the left shore and risk the fire of these batteries, while, by doing so, he will place fourteen or fifteen hundred yards between his ships and the Long Island batteries.

The sketch annexed shows the course within the scope of effective fire, which is about two statute miles. It will hardly be questioned that a decent sea steamer should run ten knots hourly (sea miles) in smooth water; these are equal to eleven and a half statute miles. Of course, she takes the strength of a flood tide and spreads every stitch of canvas to a fair wind, which ought to add another mile, making the total speed twelve and a half statute miles per hour, (three hundred and sixty-seven yards per minute,) at which rate she will pass over a mile in four and three-fourth minutes.

Tracing the assigned course through the scope of the guns on both sides, marked by the circles, it will be found that the distance run is about two miles; that is, the steamer will not be more than ten minutes under fire.

The 32-pounders and the 42-pounders of the Long Island water battery will require an elevation of about three degrees to reach the enemy, the 8-inch sea-coast howitzers about four degrees—both unfavorable to ricochet; for the projectiles will bound high in rising, and with a power much diminished even when the weather is smooth; but with the ripple occasioned by the moderate breeze, which is *supposed* to be taken advantage of, the ricochet could not be depended on for direction or force, and therefore the direct firing only will be available on the right hand, especially from Fort Hamilton, which is five hundred yards in rear of the water battery, and the guns there mounted would need at least five degrees; their shot could have no ricochet whatever, and would generally sink where they strike the water.

Taking into consideration the deviation of the projectiles and the rapid movement of the steamers, the chances of oblique impact from the incurvation of the trajectory, the variety of curved surfaces forming a ship's side, and the constant change in their manner of presentation to the direction of the ball, it is probable that not more than one shot or shell in ten can be relied on at this distance to produce a maximum penetration.

The principal work on the left, Fort Tompkins, is situated on a high hill, and two other batteries (Hudson and Morton) are in elevated positions.* Their fire is therefore not so efficacious for short distances.

To an enemy which should thus attempt to escape the fire of Fort Lafayette, by steering in with the Staten Island shore, the guns of the water battery (Fort Richmond) would be very formidable.

This work mounts twenty-seven 42-pounders,* of which it is probable that not more than a third can be made to bear on any one point.

At two hundred yards, which is to be the nearest approach of the ships in passing, the maximum penetration of 42-pounder shot in oak will not exceed fifty inches.

The time of exposure to the fire of the fort would be about fifteen minutes for a sailing ship at the rate of eight knots, and about ten minutes for a steamer going eleven knots.

Would the damage received in that time be likely to injure so many vessels as to prevent the design on the city entirely, in consequence of the reduction of the force?

In attempting to arrive at some satisfactory response to this query, one is bound to avoid possible contingencies, and to adhere to those which experience has indicated as probable.

A shell properly placed will sink a ship; a hot shot will set her on fire; but it would be very unwise thence to infer that this would necessarily be the effect of every shot fired at the ship.

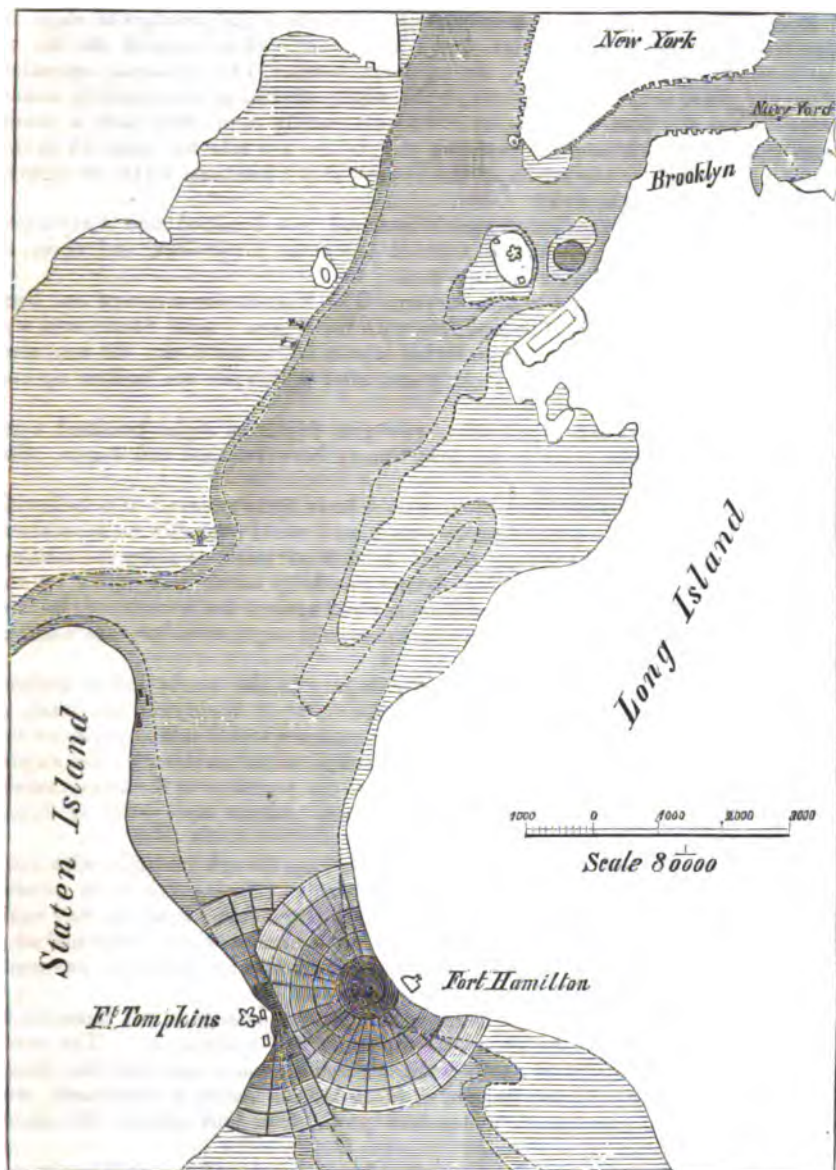
The Hornet sank the Peacock in fifteen minutes; but no naval officer would infer from the fact that a sloop-of-war could generally obtain a like result. So far from that, it is unprecedented and may hardly occur again.

Uncertainty as to the distance, change of position, interposition of the smoke in a covered battery, lack of deliberation, will cause the failure of many shot to strike the object at all.

The exactly fatal spot is limited to a few inches of surface near the water line; in other places a ship will sustain a large number of shells.

The prodigious endurance of line-of-battle ships will appear to any one who will look over the records of sea fights. Hour after hour they have been known to sustain an unceasing fire at each other, with every gun on the whole broadside, and yet but one or two cases of sinking during a fight will be found.

* See report of Board of Engineers.

Passage through the Narrows, New York harbor.

Let us note a few instances of endurance that have occurred in well known engagements :

In 1770 the *Sandwich*, ninety-eight, received seventy shot holes, seventeen of them between wind and water, (Rodney and DeGuichen.) She continued to form part of the English fleet, and cruised actively, as the flag-ship, until Rodney went home, eighteen months afterwards.

At Copenhagen, Nelson anchored his ships about three hundred yards from the Danish line, and received its fire for more than three hours. Of the fleet

not one was sufficiently injured to interfere with the active operations against Sweden and Russia that followed.

More recently, in an affair ill calculated to maintain the *prestige* of ships in attacking batteries, it will be seen that a line-of-battle ship received the fire of two batteries, of four guns each, during seven hours. The deliberate operation of one of these *with hot shot*, through the whole afternoon, was entirely unmolested by the fire from the ship, as it appears hardly more than half a dozen shots from her struck near the battery; yet she did not take fire until six in the evening. I allude to the action of the Danish ship *Christiana VIII*, of eighty-four guns, Eckenfjorde, 1849.

At Algiers (1816) the Impregnable received two hundred and sixty-eight shots in her hull, of which fifty penetrated below the lower deck, and three, of 68-pounders, six feet below the water line.

Even frigates will endure severe service. The Macedonian received one hundred shots in her hull in the engagement with the frigate *United States*, and was brought safely into port. After receiving repairs in her topworks she was used in the *United States* navy for sixteen years, after which she was broken up and rebuilt entirely.

In 1810 the *Galatea*, a small thirty-two gun frigate of eight hundred tons, received seventy-eight shots in her hull,* many between wind and water. She continued to cruise, however.

A fleet of line-of-battle ships, then, would have little to dread, it is believed, from Fort Richmond in attempting to pass it, and could probably do so without material damage. If the enemy should deem it advisable to allow the leading ship to anchor abreast the battery during the thirty minutes occupied by the line in passing, the other ships would be insured against the severest of the fire, and the entire loss devolved on one which certainly ought to endure this without being disabled.

Steamers have the additional liability of injury to the machinery or boilers, thereby suspending the action of the engine. But if their sides are lined, as they should be, with the coal bunkers, their contents would suffice to arrest the progress of the shot or shells, and prevent damage to the machinery; the explosion of the latter might be rendered comparatively harmless in the loose masses of coal, unless it were bituminous, and on that account susceptible of being ignited.

The fire of the ships would, of course, be kept up, though probably with very little damage to casemated works. The smoke enveloping the hulls would, however, tend to increase the difficulties of distinguishing from the fort sufficiently, and would embarrass the aim, while the entrance of an occasional shot into an embrasure might dismount a gun and fracture the cast iron casemate carriage into atoms, thereby doing infinite mischief.

It has been assumed that the enemy attempts the passage of the Narrows in broad day. But suppose he choose a dark night and mid-channel. The strait is more than three-fourths of a mile wide, without a shoal nearer than the shore. There is neither difficulty nor danger, so far as the navigation is concerned; and the random fire of guns at eight hundred yards, from both sides of the shore, would be a small matter.

The brief outline of the probable results of a well designed and well conducted endeavor to pass the Narrows may perhaps fail to shake the faith of military men in the capacity of the works to exclude ships. But would it be wise to trust the fate of the city even to a chance, remote as it may be? For if successful, even the board of engineers would hardly rely on the works about the city

* In a squadron that captured the French frigate *Renommée*, afterwards named the *Java*, and taken by the *United States* ship *Constitution*.

as a means of further prevention. Speaking of them, (Fort Columbus, &c.,) the report says, (page 53:)

"It is a disadvantage of their positions, however, that the destruction of the city might be going on simultaneously with the contest between these forts and the fleet."

If the Narrows *are* forced, certain it is that in less than half an hour the steam frigates will be within range of the batteries of Governor's island and the small forts about the city. What now will intervene to prevent the destruction of the public works? Should the enemy choose to pass some of his ships round to the northward of Governor's island, every shot from our own guns that misses his hulls will tell on the devoted city, and effect more damage than the enemy himself would, in cold blood, be willing to inflict. A force now may also be detached to the navy yard and other places. Rockets, carcasses, and shell put in operation, and in a few hours the flames will strip us of the public and private resources. If a detachment be landed, meanwhile, to aid, the work will be done effectually; and the ebbing tide convey the fleet to the lower harbor, there to intercept the commerce and to blockade. Two or three steamers of the attacking force may be destroyed, the detachment on shore cut off; but what would such losses be in comparison to those inflicted?

In the conclusion from certain premises, then, the views here entertained accord with that of the engineer's report, as thus expressed:

"If the mere passing under sail, with a leading wind and tide, one or even two sets of batteries, and then carrying on operations out of the reach of these or any other, *were all*, the enemy might perhaps accomplish it."

At the same time there can be no doubt that the defence of a port may be made good, when its shore line permits of the condition prescribed by the report as sufficient, thus:

"Batteries should succeed each other along the channel, so that the enemy may nowhere find shelter from the effective range of shot and shells while within the harbor, even should he succeed in passing the first batteries. Provided the shores admit this disposition, and the defences be supplied with an armament, numerous, heavy, and selected with reference to the effects on shipping, the facts we have quoted from history show that these defences may be relied on."

The only question will be as to the certainty of so disposing the land works.

Other passages which occur in the report of the board of engineers seem far more applicable to the case under consideration, and I cheerfully avail myself of them as fully expressing all that I desire to add on this head.

"There are, doubtless, situations where it may be necessary for us to present a defensive array, at the same time that to do so by fortifications alone would be impracticable; and it is not, therefore, prejudging the question we are about to examine; it is neither underrating fortifications, nor overrating these floating defences, to say that these last are, some or all of them, indispensable in such position.

"Any very broad water, where deep soundings may be carried at a distance from the shores greater than effective gun-range, and where no insular spot, natural or artificial, can be found or formed nearer the track of ships, will present such a situation, and we may take some of our great bays as examples.

"Broad sounds and wide roadsteads, affording secure anchorage beyond good gun-range from the shores, will afford examples of another sort; and harbors with very wide entrances and large surfaces exhibit examples of still another kind.

"As in all such cases fortifications alone will be ineffectual, and, nevertheless, recourse to defences of some sort may be unavoidable, it has not failed to be a recommendation in the several reports on the defence of the coast since 1818, that there should be a suitable and timely provision of appropriate floating defences. And until the invention of man shall have caused an entire revolution

in the nature of maritime attack and defence, these or kindred means must be resorted to; not, however, because they are means intrinsically good, or suitable under other circumstances, but because they are the only means applicable."

Admitting, then, that "any very broad water, where deep soundings may be carried at a distance from the shores greater than effective gun-range, and where no insular spots, natural or artificial, can be found or formed nearer the track of ships, will present such a situation; and we may take some of our great bays as examples," as a premise to the second query, then what auxiliaries shall be resorted to? Of all those which, in connexion with permanent works, might be selected to control effectually the channels of our principal watercourses and harbors, none are less reliable than floating batteries and gunboats.

In the well-constructed fort, the chief merit is a capacity of endurance almost impregnable to the assaults of shipping.

In the ship, a mobility which gives the facility of transferring the great power of her battery to any part of the channel that may need it. The disadvantage of one is its immobility, which restricts it to a fixed point, whence it can control nothing beyond gun range; of the other, a vulnerable material very susceptible of damage from protracted battering.

The floating battery unites the weak points of both fort and ship. It is neither spear nor shield, and is altogether objectionable, as inefficient, costly, and unsuited to the character and resources of a great nation. Its worthlessness as a defence is well manifested by the affair at Copenhagen in 1800, under circumstances when, of all others, it would have been most gratifying to every sense of justice that it should have protected the neutral rights of a brave but feeble nation. On that occasion there were six hundred and twenty-eight guns mounted on a line of floating defences, supported, as well as the urgency of the case admitted, by several forts and a reserve of heavy ships.

Nine English line-of-battle ships entered the channel skirted by the Danish line; commenced action at distances varying two hundred to four hundred yards, captured and destroyed the Danish floating batteries in three or four hours, and sustained no damage sufficient to interfere with their proceeding against the other parties to "armed neutrality"—Sweden and Russia.

The report of the board of engineers, previously referred to, embodies many interesting details of this event, to which the only material objection is the mode of stating the force.

1st. The *Bellona*, 74, and *Russell*, 74, grounded on the edge of the shoal, having their own line directly between them and the Danes, so that their fire could be of little avail, though themselves might be much damaged by the shot from the enemy which missed the English line.

2d. The frigates and sloops had been directed to take the stations of these ships opposite the *tick rower* battery, so that of the twelve line-of-battle ships only nine were opposed to the floating batteries, being about *fifty* guns stronger than the Danish line, and not *three hundred and eighty-two*, as the report infers.

One of the board of engineers' deductions from this engagement is so conclusive that it may be quoted without further comment. It is thus (page 20:)

"That it illustrates strikingly the advantages that a fleet possesses over a stationary line of floating defences. Lord Nelson was superior to the whole of his adversary's floating force; but not being disposed to run any unnecessary hazard, he directed all his force upon a part of the Danish line, which was of course defeated; and had there been no other than a floating force present, so of course would have been the remainder, had it been twice the strength it was. This example fully confirms what we have before urged on this topic."

Some idea of the expense of large floating batteries may be gathered from the paper of General Gaines on coast defence. Those proposed by him were to carry one hundred and twenty to two hundred cannon. The estimated cost by

the chief naval architect was \$1,400,000, for each of the batteries with its tow boats; which sum would build three line-of-battle ships or two war steamers.

It is further to be urged, that any such passive system of defence is entirely at variance with the tone and temper of our people, and the reputation of a powerful nation. The national policy may be strictly defensive, but when compelled to resort to war, its system of operations should be rather offensive in its character, if it were only to enforce the sound maxim of preserving its own soil from the desolating presence of an enemy.

If the floating battery is the most useless of all the stationary defences, the gunboat may be considered as the most miserable of all the war craft that sail; nothing more effectual could possibly be devised to render skill and bravery unavailing. The experience which we have already had has sufficiently confirmed opinion in the navy as to the dependence that may be placed on the performance of these pigmy warriors, and renders it needless to occupy time in any labored exposition of their worthlessness. In reciting the events of past days, our own naval historian (Cooper) has very distinctly given his estimate of their demerits, which, by the way, he does not altogether confine to the question now at issue, of capacity for offence and defence, if we may judge from the following pithy paragraph:

"This was the development of the much condemned 'gunboat system,' which for a short time threatened destruction to the pride, discipline, tone, and even morals of the service."

It is singular, however, that two distinguished statesmen should, about the same time, have given their faith to the efficacy of the gunboat—one in England, and the other here. Mr. William Pitt, about the year 1803, in a motion censuring the ministry, found a strong reason in their neglect to provide more gunboats. Admiral Sir E. Pellow, then in Parliament, was unable to sustain his political friends in the measure, and in a short and characteristic speech used these words:

"As to the gunboats which have been so strongly recommended, this mosquito fleet, they are the most contemptible force that can be employed."

About thirteen years later it fell to his lot to verify this opinion. In his memorable attack on Algiers, it is stated that "soon after the battle began the enemy's flotilla of gunboats advanced, with a daring which deserved a better fate, to board the *Queen Charlotte* and *Leander*. The smoke covered them at first, but as soon as they were seen, a few guns, chiefly from the *Leander*, sent thirty-three out of thirty-seven to the bottom."

Dispensing, then, with such inefficient aids, there remains for consideration the navy proper, which, it may be asserted, is indeed not only a sure reliance, if it be properly constituted, but is indispensable to any degree of security along our line of coast, now washed for thousands of miles by the two great oceans; and also to maintain the communication by water and the isthmus between the Atlantic and Pacific States, where forts, floating batteries, and gunboats can no longer enter into the question, even were they a perfect defence for every other interest covered by our flag.

In the first place, it is believed to be susceptible of proof that a naval force, somewhat greater than the attacking force, may be relied on in connexion with the present or proposed works at Boston, New York, Delaware, Chesapeake, and some southeast port, to protect the coast from Florida to Maine, and (as corollary to this proposition,) will destroy or capture the enemy that may commit itself seriously against either of these ports.

To illustrate this, I will assume the attacking force to be the twenty steam frigates of the engineer's report of 1840. To New York harbor, to Delaware and Chesapeake bays, would be assigned a certain number of ships, varying with the peculiar circumstances of the time; for the present, let us assume the defending force to be stationed thus: New York ten ships, Delaware eight, and

Chesapeake seven; and to avoid the recounting of local details, I again recur to New York as the object selected by the enemy.

The stationary floating defence to be used will be the old sailing frigates and line-of-battle ships of the navy, having heavy batteries on the gun-decks, and pivot pieces of the largest calibre on the upper deck. Every spar taken out, even to the lower masts, and the ships well secured with several chains to their moorings; one at A, to bear on the ships in crossing the bar; three at B, C, and D, to close the swash channel; and one at E, inside of the southwest spit; which, with the fort on the Hook, is to assist in defending the main channel.

The enemy's twenty ships are signalled from the Neversink heights, and in half an hour the Delaware and Chesapeake squadrons are at sea steering north.

It is obvious that any loss of time from irresolution or from want of information which is to be obtained by reconnoitring, must be to the disadvantage of the enemy.

Suppose him well supplied with pilots, which, in a war, the Cunard line can furnish abundantly, and aware that reinforcements are on the way, it is probable that the attack will be commenced without delay.

The first point of defence is at the bar; the deep water here is so narrow that the enemy will hardly risk his ships in any one channel, even in two columns, and his line is therefore exposed to the concentrated fire of our ten ships, and of the line-of-battle ship at A.

After crossing, the van will endeavor to form the line abreast, as far as the channel admits, in order to relieve the leading ships; but our own ships recede before them, and by this time the guns of the line-of-battle ships B and C are beginning to tell. Following our steamers, the enemy soon comes within the fire of the fort, and advancing onward, the line-of-battle-ship at E is brought into play. The headmost of his ships have now for more than half an hour been under the concentrated fire of four hundred pieces of the heaviest calibre; and it is hardly possible that they should not be incapacitated for moving with any rapidity. Even if their offensive powers be undisabled, they must therefore be soon dropped astern by their main body moving with full speed, and their force be lost in the rest of the day's operations. On the other hand, our own ships have felt the fire of the enemy's leading ships only, and if any one be damaged, can anchor near the fort or line-of-battle ships, and do good service on the passing ships.

It is probable that in rounding the southwest spit, the number of the hostile fleet will be reduced to fifteen or sixteen ships, capable of full motive power, if an average degree of success have attended the defending force. And these must be brought to action before reaching the city.

Without pretending to indicate the precise time and place most proper for this, suppose that it be decided to make a stand before entering the Narrows.

When it is evident that the enemy will not attempt to force the swash, and has followed the main channel, the line-of-battle ships A, B, C may slip their moorings and be towed by river steamers on each side up the swash, their draught having been adapted to that purpose, and take in moorings previously provided at the *debouche* of the channel into the main course below the Narrows.

Our own steamers will here prepare to receive the attack, or to make it if declined by the enemy, who may adhere to the main purpose of reaching the city.

The action will, of course, terminate in the defeat of the weaker party, though not necessarily in the destruction or capture of his ships. But in what condition will the enemy find his ships? How many of his steamers will there remain to attempt the passage, and what will be their capacity to do it after the rough handling that has been experienced?

It may be that not one of his vessels has struck its flag or is disabled, but the power of moving with certainty and speed is crippled, and their exposure to the

Proposed defence of New York harbor.

fire of the forts therefore so much increased in time as to render the attempt hazardous. Pieces of heavy ordnance can also be mounted on stout merchant ships and steamers, forming a reserve to be placed along the passage where the guns of the forts do not command, so as to sustain a steady cannonade on whatever ships of the enemy may remain in a condition to proceed. Meanwhile a few hours will bring up a fresh squadron, and soon after this will be reinforced, so that fifteen steamers in perfect order will enter the bay. The result must be the capture and destruction of the invading force.

This is the view which I consider fairly presentable of the favorite case so frequently urged, wherein the advantage is enjoyed by the assailing party of selecting time and place without warning to the defending force.

It seems highly probable that the defence of any important point, with some

exception as it regards the southeast and Gulf coasts, can be made good with no greater additional force in the aggregate than above mentioned, admitting every advantage that can be claimed for this arrangement of the enemy.

That advantage is limited to a space in time that admits of no accident to force, speed, or any of the multifarious details of a fleet. Its operations must be as precise and perfect as those of the machine that moves each steamer.

From the moment that the hostile fleet comes in sight there is a sure concentration of a superior force, and in a few hours there will no longer be the power to choose. An action is inevitable; and whatever be the result to our own squadron, that of the enemy will certainly be unable to prosecute any enterprise against harbors or coasts for the time.

It is, however, out of the question for any such fleet to hazard itself on a coast where the certain superiority, no matter how small, exists; and the entire line of shore northward would therefore be fully secured against an enemy's vessel.

Southward of Hatteras the necessity of naval means for defence is even more stringent than to the northward.

The objects of attack differ as widely also from those just under consideration as the manner in which shipping must be applied to defence in order to be available.

The resources of private enterprise are no longer aggregated so densely, but are scattered along the country bordering on the coast in a manner that renders it difficult for the most eager marauder to do much in his line.

The commercial cities are pretty well defended from the extensive movements of large fleets by the bars which border the channel-ways to their harbors.

The interior lines of communication formed by the long downs of sand that skirt the Atlantic shore are, however, accessible to vessels of inferior force, and the command of these would give the control of all the trade that by its light draught finds convenience in the smoother waters of the inlet. The most important debouch, however, for the resources of the country is the outlet of the Mississippi, through which is poured, in a never-failing tide, the rich products of the great valley of the river. To check this, to impede it, to harass in the least degree, would be an evil of the greatest magnitude, and be felt in the remotest regions of the west.

The general character of the southern shore of itself prevents the operations of vessels of heavy draught; hence the defence must be nearly the reverse of that recommended for the shores north of Hatteras. There heavy ships will lie inshore, and light cruisers be thrown out seaward to watch the motions of the main force of the enemy, and coastwise to check small marauders or parties for wood and water. On the southeast and Gulf coast the light steamers and vessels of the third class would keep the inlets and their approaches and the various avenues contiguous to the Mississippi. While seaward the heaviest ships must abide the first brunt of the attack and defence at all risk, so as to cripple the forces of the assailant should he be strong enough to close with the inshore squadron.

The true and only key, however, to the defence of these shores, and to the immense interest there collected, is the Havana. The island to which it belongs enters its western extreme into the Gulf, leaving but two passages for vessels so narrow as to be commanded with the greatest facility; these are the great thoroughfares of trade and the mail steamers from New Orleans to California and New York. Hence if the use of the Havana be even at the disposal of an enemy while in the hands of a neutral power, each and all of these interests could be with difficulty defended, even by a superior naval force, and never guaranteed against severe losses. While from it as a United States port, a squadron of moderate size would cover the southeast and Gulf coasts, protect the foreign and inshore traders, and secure the lines from New Orleans or New York to the Pacific States by way of the Isthmus, its occupation would necessarily

be the object of every expedition, military or naval, preliminary to any attempt on the southern trade or territory.

At present the force of large vessels for the southeast coast would be obliged to use the harbor of Brunswick as their depot, refuge, and centre of operations. The report of the commissioners has already decided this to be the best south of the Chesapeake. With the command afloat, Key West and the Tortugas might be used, but not otherwise, as no supplies are to be had at either, and no water at the latter. Pensacola would have to answer for the Gulf shore.

The coast of the Pacific States differs in many respects from that of the Atlantic in formation as well as in condition.

The circumstances of settlement, product, and trade have yet to determine much that will govern in the extent and application of the elements of defence.

At present there can be no doubt that the two great harbors at San Francisco and the Columbia river will require immediate measures for their protection. The sites of land works have probably been vindicated by the engineers sent for that purpose, though some time must elapse before these can be completed.

It seems, therefore, that the naval force in these regions should be of the most effective character in power and number, singly and collectively, inasmuch as it must for a while be the exclusive reliance for a defence of any kind of harbors, as well as of coasts. The squadron should always be able to land at any point a force of two thousand seamen and five hundred marines, which, with twenty or thirty of the boat howitzers on their field carriages, would be found an effective auxiliary in emergencies.

The manner in which our own squadron operated along the coast of California while held by the Mexicans will best exhibit the character of the attempts likely to be made by an enemy against our own people now inhabiting that State. If the views above expressed, in relation to the defence of the United States harbors and coasts, be correct, it then remains to consider the species of naval force which will be required to perform the part assigned to it.

By referring to the navy list it will be seen that the number of heavy ships that is available, or could be made so by necessary repairs, consists of nine line-of-battle ships, twelve frigates, and five steamers.

This force is obviously too small for the objects for which a navy should be designed. If the number already assumed to be required for the defence of the Atlantic coast in war be applied to that purpose, it would leave a very insufficient force for the Pacific shores, for the protection of the line of communication by sea between the Atlantic and Pacific States, and for general cruising to cover our own commerce, and annoy that of the enemy.

Not only is the effective number of the present navy too small, but the character of the force has been depreciated to a very serious extent by the superior powers of offence that have been conferred on the large steamers that now constitute part of a navy here and elsewhere. The cannon carried usually as the main reliance of line-of-battle ships and frigates are thirty-two and forty-two-pounders. In our service the latter calibre may be considered as exceptionable, inasmuch as it is not recognized by the regulations of 1845.

The war steamers carry sixty-four pounders. It is true that the line-of-battle ships may have one hundred of the thirty-two-pounders, while a steamer of the same tonnage has but three of the sixty-four-pounders.

But it will be admitted that if the constituent of one battery is deficient in any one element of power, which is possessed by that of another battery, that no mere increase in the number will compensate for this defect. Thus, if the thirty-two-pounder shot fired with nine pounds of powder be inferior to a shot of sixty-four pounds fired with sixteen pounds of powder in the distance to which it will range with sufficient force to do material damage, then it is plain that so long as that distance can be preserved it will matter little whether a ship oppose one hundred or one thousand thirty-two-pounders to the three sixty-

four-pounders: she will receive constant damage from the repeated efforts of the *small* number of large pieces without the power of inflicting any harm by her *large* number of *small* pieces. A similar relation, in effect, may be noted in the effects of other military projectiles. Thus, we know that grape from a thirty-two-pounder would be harmless against the side of a ship, when the shot would pass through easily, and yet the stand of grape is composed of three-pound shot which, even if fired separately, would still be very little nearer the effect of the thirty-two-pounder shot.

The important question is in relation to the capacity of the steamer to maintain the distance suited to her powers of annoyance—and of this there can be little doubt since the passage between the United States and England is made with ease and certainty in the severest winter weather by the steam packets, their average speed being then seven to eight knots with fair and foul winds, and they could in all probability go very little below their highest rate in any weather in which cannon could be used.

Those who have witnessed the performance of the *Mississippi* in some of the Mexican "northers" know what can be done by a good steamer in a strong gale. Thus the twenty steam frigates would be very unequally matched in action, by our covering squadron of sailing ships with the thirty-two and forty-two-pounders, if it could be said that they were matched at all. The remedy for this is not difficult, and can readily be attained by a reorganization of our armament, though it would be more expensive to adapt the present sailing ships fully to the ordnance which experimental practice has indicated as preferable than to build new ships. Thus a two-decker would carry the same weight of metal, but not the same number of cannon. Hence, it would become necessary to reduce the number of ports, and to re-distribute them along the broadside; and to do this, the whole planking and frame, nearly to the water's edge, must be removed and replaced to suit the changes required in piercing the side with the proper number of ports—involving an expense equal to half the cost of a new ship.

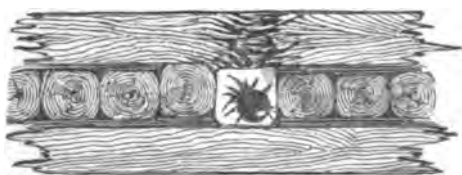
They would still need an addition that could not be dispensed with, which is an auxiliary steam power sufficient to give a moderate rate in a calm, in manœuvring or in getting out and in harbor. For this purpose, greater length would be required than any of our present frigates possess, as they now barely stow the provisions and water required for distant cruising. If these ships be cut and lengthened, the cost in connexion with that necessary for heavier ordnance will be fully equal to the expense of building new ships with every disadvantage that can attach to a sacrifice of unity of design in model; for no skill in the builder could possibly develop any one essential of form in this piece of patchwork, except by mere accident.

The true policy, not only as regards economy, but in reference also to accomplishing the object in view, is to commence without delay the reorganization of our naval power by the gradual addition of ships built upon the most recent models, and to carry heavy ordnance as well as an auxiliary steam power.

The experimental practice at the navy yard has developed some points of interest in relation to the pieces likely to combine the several essentials of accuracy, range, and force, and the bearing of all the results has induced me to propose the construction of a class of ships designed to unite a higher degree of efficiency than any frigate or seventy-four mounting the present armament, &c.

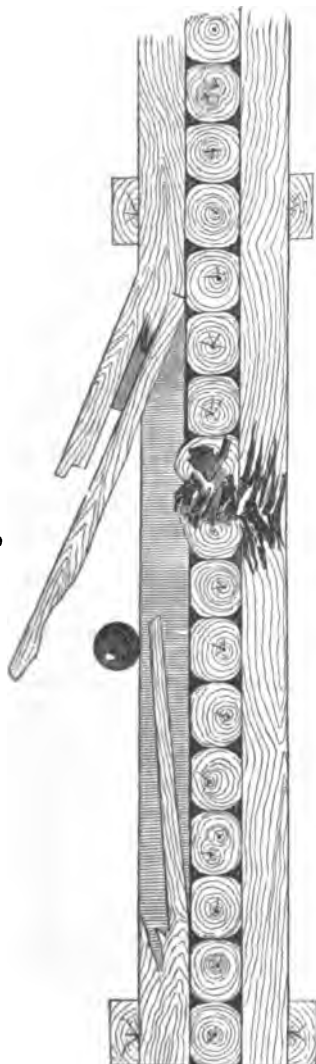
Instead of twenty-six thirty-two-pounders, and four eight-inch shell guns on the gun deck, the new frigate is to carry twenty-six nine-inch shell guns. The comparative penetrating power of the two pieces is shown in the sketch annexed: The thirty-two-pounder shot passed twenty-one inches into an oak target, three-fourths of a mile distant. The nine-inch shell, uncharged, broke through the whole thickness of thirty inches.

Fig. 1.



Shot from a long 32-pounder, charge 9 lbs.—Penetration in oak, distant 1,300 yards, thickness 30 in.

Fig. 2.



Nine-inch shell, weight 73 pounds, charge 9½ pounds.

The diminution of force which both would undergo at greater distances would lessen the power of the thirty-two-pounder shot yet more, while the nine-inch shell would still retain every advantage arising from its explosive power. The only pieces of the present force that would approach it being the two eight-inch shell guns, which, in number and intensity of effect, are not comparable to the thirteen nine-inch shell guns.

If the distance were lessened, the broadside of nine-inch shell guns would in weight of metal alone be nearly double that of the thirty-two-pounder and eight-inch shell guns.

On the spar deck are to be no broadside guns, but, in lieu thereof, seven shell guns, of ten or eleven-inch calibre, on pivots, and capable of being pointed around the circle in every direction.

An auxiliary propeller power will be placed astern, for which purpose the length of the ship must be adapted to its convenient reception.

The points of this ship will be:

1st. Cost of Construction.—This ought not to exceed the cost of an ordinary sailing frigate, with the additional expense of steam equipment.

The *St. Lawrence* cost about \$350,000; and the cost of a suitable engine, boilers, &c., as furnished by Kemble, would be about \$70,000;—total, \$420,000.

The *Susquehanna* steam frigate cost very little less than \$700,000.

2d. Force.—The broadside weight of metal of the new frigate would be about 1,800 pounds. The *Pennsylvanian*, three decker, present armament, 2,100 pounds. The *Ohio*, two decker, 1,500 pounds.

Comparing the long range with that of the steam frigate.

New ship, seven pivot guns, 11-inch	940 pounds.
Susquehanna, three 64-pounders	192 "

3d. Cost in commission.—Only greater than that of a sailing frigate when steam is used, the crew not exceeding six hundred men, which is about that of the Congress frigate.

Comparing such a frigate with the heaviest steam frigate, it will be seen that the advantages are, far greater superiority in range and force, as the propeller frigate opposes seven 11-inch shell guns to three 64-pounders, the relations of which are about those of the 9-inch to the 32-pounders; and though her speed by steam is not equal, yet if the steam frigate once commit herself to the chances of a combat she will be beaten, for her motive power is far more vulnerable in nearly every point, and if deranged in the least by any of the contingencies of an engagement, she is at once exposed to the nearer approach of the *propeller*, and consequently to the full effect of the broadside guns, while her opponent loses but an auxiliary power, if any of her machinery be touched, her defence being made good against the steamer at any distance or position which the latter may select.

If opposed by the ordinary line-of-battle-ship with the present armament of 32-pounders and 42-pounders, the propeller frigate may, at a long range, play her seven pivot guns with comparative impunity, or she may close and bring into action the whole broadside.

Of course it is not designed to assert that the navy would be constituted of this force exclusively, but only that on such a class of ships reliance might safely be placed for defence of the coasts and harbors against any of the heaviest ships in foreign service. In time of peace they would cruise as flag-ships, while the inferior classes might receive pieces of such calibre and number as would be suitable.

The second class would be ships with a light deck over the battery and a pivot gun on the to'gallant fore-castle and poop.

The third class, ships with a light deck over a broadside battery, or else neither light deck nor broadside pieces, but heavy pivot guns to the extent of the accommodation.

All the vessels of lower rate to be steamers of five hundred to one thousand tons, mounting two pivot guns.

Query 3. Is it necessary or expedient to continue the system of fortifications on the shores of the northern lakes?

It would be a loss of expenditure already incurred not to finish the works which have been commenced on the northern frontier, and these would certainly be useful in the initial operations of a war; though there can be but little doubt that if it ever becomes necessary to direct the military operations of the United States to that quarter, the population of the States that border thereon would furnish a force fully sufficient to a prompt and final issue against any army that could be sent from England. It may indeed be questioned whether any decent opportunity for severing a connexion so expensive and unproductive would not be very acceptable to the government of Great Britain.

I have the honor to be, very respectfully, your obedient servant,

JNO. A. DAHLGREN,
Lieutenant United States Navy.

Hon. C. M. CONRAD. *Secretary of War.*

F.

Order to the Chief Engineer.

WAR DEPARTMENT, April 17, 1851.

The chief engineer will please prepare and report to the department the information called for by the second of the enclosed resolutions.

He will also, at as early a period as practicable, submit to the department his views and opinions on the subject embraced in the first of these resolutions, and will request Colonel Thayer, Lieutenant Colonel De Russey, Major Delafield, and Major Chase to submit to the department their views and opinions in relation to this subject.

It is desired that the chief engineer and the above-named officers should direct their inquiries particularly to the following points:

1st. How far the invention and extension of railroads have superseded or diminished the necessity of fortifications on the seaboard.

2d. In what manner and to what extent the navigation of the ocean by steam, and particularly the application of steam to vessels-of-war, and recent improvements in artillery and other military inventions and discoveries, affect this question.

3d. How far vessels-of-war, steam batteries, ordinary merchant ships and steamers, and other temporary expedients, can be relied upon as a substitute for permanent fortifications for the defence of our seaports.

4th. How far the increase of population on the northern frontier, and of the mercantile marine on the northern lakes, obviates or diminishes the necessity of continuing the system of fortifications on these lakes.

C. M. CONRAD, *Secretary of War.*

The CHIEF ENGINEER.

No. 8.

Report of Lieutenant Colonel R. E. De Russey.

FORT MONROE, VIRGINIA, July 26, 1851.

SIR: Being called upon by the instructions of the Hon. the Secretary of War to present my views and opinions on certain points specified in his letter to the engineer department of April 17, 1851, I beg leave to place before you the following observations upon the subject, which I request you will lay before the Secretary of War.

Fortifications had their origin with the Greeks, and have been adopted, improved, and perfected by all civilized nations from that time to this. They long since have become a combination of sciences, involving mathematics, pyrotechny, strategy, and the art of war. The objects of fortifications are to make strong by art what otherwise would need an accumulation of active physical means, as also to protect exposed positions from sudden assaults of an enemy. In producing the first result, they leave at the disposal of the country invaded or attacked an active force which otherwise might be kept in check by an equal or superior one. Again, they secure in a great degree, within certain distances, positions rendered important either by their location or the magnitude of their commerce and resources; hence all important seaports should, in my opinion, be protected by suitable fortifications.

1st. Because otherwise an enemy's fleet might for a time with impunity ride

in safety in our harbors, and harass or even destroy the commerce and property in those harbors.

2d. Because they become dangerous barriers, which an enemy is seldom disposed to leave behind him, the custom of war being to attack fortifications when offensive operations are intended to be carried on by an enemy beyond their localities; and finally, a fortification is the usual depot for all munitions of war, both in implements and provisions. The heavy ordnance, so essential to our present system of defence, could hardly be stored in safety elsewhere, unless at such distances from the seaboard as to render their transportation tardy and perhaps hazardous to the several points where they might be immediately needed. I will close these preliminary remarks by adding, that fortifications give confidence at home and mistrust to an enemy, and compel him to make additional and costly preparations, both in money and time, when he expects to come in contact with them.

I will now proceed to give my views and opinions on the several points enumerated in the Secretary's letter to the chief engineer, and will discuss these in the order in which they are presented.

1st. I look upon the invention and extension of railroads as of important advantage during a state of war, so far as the rapid transit of both troops and munitions are concerned, but that advantage might be too much depended upon.

Railroads are so easily impaired or destroyed that it would be dangerous to depend entirely upon their use. An enemy would naturally weigh the value or importance of such conveyances, and would offer such high rewards for their destruction as would be likely to meet with success. It is well known that our railroads are generally constructed through the most uninhabited portions of our country, and are in consequence liable to be approached and destroyed by mercenaries, who would run many risks to obtain rewards commensurate with the importance of the undertaking.

I have already remarked that without fortifications our harbors and seaports would be exposed to an enemy's fleet, and I now give it as my opinion that all the facilities afforded by the railroads that centre, for instance, in and about the city of New York would not prevent an enemy's fleet from destroying that city, were it not protected by suitable fortifications. The same result would undoubtedly attend any other of our important commercial cities on the seaboard; this opinion is based upon the supposition that an active and competent naval force would be employed by the enemy to attain these important results by a sudden attack, and that, too, combined with an adequate number of troops in case it would be found necessary to make a simultaneous one.

We have had during the late war with Great Britain many instances to warrant this opinion. I will cite a few of them to show the necessity of fortifications in our harbors.

The defence of Fort McHenry saved the city of Baltimore. The defence of Craney island saved Norfolk and the navy yard at Gosport. The temporary defences at Sandy Hook, New York, prevented the blockading squadron from entering within the waters of the bay, and compelled the ships every evening to make an offing, thereby giving an opportunity to our merchant vessels to slip out of the harbor. These latter defences were insignificant in themselves, but they acted in conjunction with some fifteen or twenty gunboats, each mounting one gun, which were generally anchored in the cove, and ready at any time to co-operate with the fort and block-house erected on the Hook; and had Fort Washington been defended instead of being destroyed, it is my opinion that the Capitol of the Union would have remained unmolested during that war.

2d. The navigation of the ocean by steam, and the application of steam to vessels-of-war, would seem, in my opinion, to increase the necessity of fortifying our sea-coast. The great advantage of steam power lies more in the certainty of accomplishing an object in a given time than in increasing the strength and

power of an enemy. In other words, an expedition planned for a particular point on our sea-coast by a transatlantic power can be calculated to a day when steam vessels are being employed for the purpose; but those steam vessels, in the presence of or passing our fortifications, are more exposed to be injured by our forts than ships-of-war would be. The machinery of the one cannot be well protected, consequently is easily impaired, and when impaired, the steamer's motive power is either retarded or entirely suspended, whilst the other is so constructed as to be at times crippled in her hull and even her spars by shots, without losing much, if any, of her way in passing a battery.

I have just said that the certainty of arriving at a particular point at an appointed time is the advantage obtained by the use of steam in vessels-of-war; that advantage is a great one, and the only means to counteract it is to have permanent defences where it is likely an enemy would endeavor to surprise any one or more of our seaports.

I believe it to be demonstrable that, with our present system of fortifications, provided, as they are intended to be, with the heaviest mortars, howitzers, and columbiads, the advantage on our side would be increased had we to contend against war steamers instead of ships-of-the-line.

The difference of speed between the two kinds of vessels when within shot distance from our forts is more than counterbalanced by the greater surface offered in the length and breadth of the deck of a steamer, and the constant exposure of her machinery to curved fires.

The machinery of these war steamers is supposed to occupy about one-fifth of the length of the vessel; one single shell or shot passing through that portion of her hull would in all probability injure some part of that machinery, and delay or stay her progress. With our heavy guns we may calculate to reach with certainty and effect an enemy's vessel at the distance of two miles. If that vessel is compelled to pass under our guns, she will, sailing at the rate of twelve miles per hour, be within reach of our pieces, say twenty minutes; in those twenty minutes each gun will, upon an average, discharge twelve shots, consequently a battery of say forty guns will discharge four hundred and eighty shots and shells, which, when directed with skill, will, in most instances, have their effect against passing vessels.

In answering the third point in the Secretary's letter to the chief engineer, I would say that vessels-of-war would at all times afford important services in the defence of our seaports; and could they be so multiplied as to be found at each port in sufficient numbers to cope, with the assistance of auxiliary means obtained on the spur of the moment, with a powerful naval force, then they would in a measure remove the necessity of creating another species of defence; but this state of things cannot well take place. Our navy can never attain such pre-eminence, and consequently must, while subdivided along the coast, as it will be in time of war, be found in the minority by an invading force, and thereby be compelled to seek for protection under our fortifications. Their co-operating with the defences in our harbors, they will become extremely important and of great assistance.

Steam batteries have often been spoken of, and might, perhaps, be of service where the channel-way is narrow, and can afford them protection from the shores; but in open roadsteads I would not rely much upon them; they necessarily must be slow and unwieldy, and in consequence liable to be turned and even avoided by an active naval force. All other temporary expedients, such as arming merchant ships, steamers, &c., might, perhaps, be made useful for a short time, and upon a particular emergency, but no reliance could be placed upon them. The immense expense attending the transformation of these vessels, together with the cost of their imperfect armament, would hardly warrant the introduction of such a doubtful system of casual defence in our large seaports. The havoc which would naturally result to these light vessels, when

engaged with heavy ships-of-the-line and war steamers, would, I am inclined to believe, be extremely disastrous. The expense, moreover, for such temporary means would, I believe, exceed the cost of the permanent fortifications constructed for the same object.

Permit me for a moment to digress, by stating that there is one consideration attending our expenditures for fortifications which, in my opinion, is far from being unimportant to the general welfare of the country, aside from the importance I attach to fortifications as national defences, and which but few, perhaps, have considered; it is, that every article used for our defences is found in a crude state in our country, and generally in the neighborhood of our important works. The manipulation of these materials gives employment to a large and useful class of our citizens, and creates, as it were, a sort of revenue which benefits both the laborer and the government, first by rewarding industry, and that industry, by the natural course of things, bringing back to the aid of the general government portions of the revenue which that industry enables the laborer to obtain from abroad through our custom-houses. For instance, a quarry, when worked, requires many hands; these hands, devoting all their time to their arduous labor, find it necessary to exchange the price of that labor for the necessities of life, hence imported goods of many kinds must find a market with them. The manufacturers of bricks, cement, lime, lumber, iron, and other materials used in the construction of our fortifications come under the same rule, and, independent of the mechanics and laborers employed in our public works, form a large and useful class of our citizens, all returning to the general fund a portion of revenue created, in fact, only by their industry.

I name this fact to show that, although many look upon our system of defence as costly, yet the advantages of it, independent of the security it affords to the country in a military point of view, are substantial and important to the community at large, inasmuch as they create a revenue by bringing out the latent resources of the country.

The fourth point relates to our northern frontier and its defences. I can but look upon that frontier as an exposed one, and consequently requiring the watchful eye and fostering care of the government. Our neighbors have been diligently employed since the war of 1814 in strengthening her borders, and many vast improvements have been made by them to keep pace with our increasing strength in population on the lakes. Their population, too, is increasing, and the Welland canal has removed obstacles which gives them now the advantage of an inland navigation from the St. Lawrence through to all the lakes. If there ever was a time when a system of defences planned and executed for the protection of our extensive northern frontier, it is the present one, when we can weigh the advantages that could be derived from the great improvements already in evidence on the opposite side of the lakes. If Great Britain should ever hereafter be found at war with us, a portion of the naval force would be found on the lakes, and interfering with our frontier towns and cities and our inland commerce. The redundancy of her population at home would naturally place at her disposal the means of increasing her forces in those inland seas, and by a system of locomotive warfare disturb and annoy a population numerically much stronger than the forces she would oppose to them.

To meet this state of things it would seem indispensable to fortify permanently certain points in our northern frontier, not only for the protection of those positions, and as depots for provisions and munitions of war, but as great rallying points for the militia and other troops.

The remarks I have already made upon the subject of national defences for the seaboard, in connexion with auxiliary means, will apply to the lake defences so far as the mercantile marine is concerned; they might become of use if supported or protected by permanent fortifications, but left to themselves they could hardly be expected to cope with vessels-of-war.

In the war of 1812 and 1814 the ascendancy on the lakes between the British navy and ours fluctuated according to the number of vessels constructed and the time they took their element; one single vessel added to the one or the other would give, for the time being, the preponderance to that side; but the time is past when we ought to think of adopting the same system, since, by the vigilance of Great Britain, she has opened the way for any number of armed vessels she may be able to spare from her own coast. These circumstances would, of themselves, seem to indicate the necessity of fortifying the vulnerable as well as the important points on the lakes.

The few defences temporarily erected during that war on the northern frontier bore testimony of their great usefulness in checking the enemy's ingress. At Plattsburg, for instance, when our navy, protected under the guns of the forts, gained a brilliant victory over the enemy; Sir George Prevost, with an army of fourteen thousand men, found there an opposition which compelled him to retreat precipitately, leaving his sick and wounded at the mercy of the American general commanding. Thus a garrison of fourteen hundred men, which was the force of General Macomb, within well planned defences, protected our navy on Lake Champlain, and taking the offensive as well as the defensive, compelled an army of fourteen thousand men to abandon the project of invading the country, which was understood to be the avowed intention of the British commander.

Many other instances of the kind occurred during that war which could be mentioned to show the importance of works of defence on our inland borders.

In conclusion, permit me to say that to protect the lives of its citizens is a high consideration with every government, but with none can it be so important as with ours, when it is considered that our population is yet too thin and sparse to furnish large masses for war services. We must, in consequence, use all means at our disposal to reduce the number of troops required for active service in time of war, and these should, so far as practicable, be protected by these means; I know of none more effectual for this important object than permanent fortifications. By multiplying them you relieve a portion of your useful citizens from the perils and hardships incident to the fields of battle, and leave them at home to pursue their useful avocations.

In presenting this feeble view of the subject, could I persuade myself that any portion of it would be acceptable or useful to the honorable the Secretary of War, it would be most gratifying to me; as imperfect as it is, I submit it with all respect.

R. E. DE RUSSY,
Lieutenant Colonel Engineers.

Brigadier General JOS. G. TOTTEN,
Chief Engineer of the United States, Washington.

No. 9.

Report of Major W. H. Chase.

CHASEFIELD, NEAR PENSACOLA, April 17, 1851.

The undersigned, in compliance with the orders of the Secretary of War, communicated through the chief engineer, has the honor to submit to the War Department the following views and opinions of the subject embraced in the first resolution of the series adopted by the House of Representatives of the United States during its session on the 3d of March, 1851.

In viewing "the general system adopted after the war with Great Britain, and since pursued in regard to the permanent fortifications then deemed necessary for the national defence," it will be relevant to the subject to allude to the condition of that defence when the United States declared themselves independent of Great Britain, and prepared to sustain that declaration by force of arms during the period of peace from 1783 to 1812, and during the war of 1812-'15.

In the first period the defences on the seaboard of the colonies, extending from Nova Scotia to Florida, were confined to a few points. England having driven the French from their North American colonies, had little fear of any future attempt on the part of France either to regain her lost possessions or to attack the other possessions of England in America.

In the course of the war of independence the English were driven in succession from Boston, New York, Yorktown, and other places, and finally from the whole country, by which the power of the United States, even in its incipency to resist aggression from the most powerful of nations, was favorably exhibited.

Few or no additional sea-coast defences were constructed during the war, yet the public and private armed ships, issuing from the ports of the United States, did immense injury to British commerce, and even kept the whole western coasts of England and Scotland in constant alarm. Some hastily raised redoubts on Dorchester heights, compelled the English to retreat from Boston with their fleet and army; and the castle defending the entrance to the harbor, falling into the hands of the Americans, together with some temporary erections of earth on the surrounding heights and islands, secured Boston from again being occupied by the enemy. Charleston was successfully defended by the Palmetto fort against a squadron of ships; and the success generally of the American arms up to the surrender of Yorktown, demonstrated, if not the impossibility of reducing the colonies to subjection, at least the enormous expenditure of life and money attendant on the attempt.

This truth led, with other things, to a change of policy in England in regard to the United States. The new administration made peace with the colonies; and the wise statemen of England saw that an intimate commercial intercourse with the United States as an independent power would probably be more advantageous to the interests of their country than the possession of colonies that would require much blood and treasure to regain and hold; whilst the trade with the same would be interrupted and precarious. The foundation of this policy was the preservation for the future of uninterrupted friendly relations between England and America; and it was the determination of the party in power to secure at all hazards and at all times peace with the United States.

But unfortunately for a strict adherence to these views, the great wars growing out of the French revolution placed England in position to struggle for her very existence as an independent power; and in the course of the contest principles in relation to neutrality were adopted, and so rigidly adhered to, that the interests and honor of neutral nations, and of the United States in particular, were compromised. In persisting to assert her arrogant pretensions, the government of England was deceived by its diplomatic agents and friends as to the effect produced in America. These, judging of the strength of the party in opposition to Mr. Madison's administration, and of the talent and influence of the principal men of that party, constantly represented to the English government that the President would not recommend to Congress a declaration of war against England in the face of the powerful party opposed to such a measure. A secretary of legation in Washington was the only correspondent of the English ministry who understood the exact state of things in the United States. He repeatedly advised the minister of foreign affairs that the latter was not correctly informed of the feeling in America; and that, unless the orders in council were revoked and other obnoxious measures and acts abated, war would certainly be declared against England by the United States.

At last the secretary was listened to, and the orders in council were repealed; but before the news reached the United States war had been declared. The messengers bearing respectively the declaration of war and the order removing the principal cause which led to the declaration, passed each other on the ocean.

Thus was the war of 1812-'15, or, as it has been termed, "the second war of independence," a blunder which England lost no time in remedying, by seeking for and concluding a peace with the United States as soon as she could do so with honor to herself.

At the time peace was made England was never more powerful. Triumphant over all her enemies in Europe by sea and land, she was left by the general peace of 1814 in possession of vast means, ready organized and practiced in war, with which she might have given the United States some severe though not fatal blows. But however much her pride of power might have been gratified by carrying her triumphant arms to America, she preferred at once to resume peaceful and intimate relations with the United States, and to secure all the advantages flowing therefrom, then and forever. Her far-seeing statesmen knew that the true policy to be followed in respect to the United States in 1815 was, with increased reasons for its adoption, that indicated by the statesmen of 1783; and they resolved that no future blunder should lead to a war between the United States and England so far as the latter could prevent it. In this favorable state of the political atmosphere, the clouds that lowered over the north-eastern boundary, over Canada during the patriot demonstration, and over Oregon, were soon cleared away. It is true that the United States yielded in these instances something more than was due to England's just claims; but it was rather the graceful yielding of a daughter to a mother's solicitation than the acknowledgment of any power of coercion possessed by England. If the peaceful views of England were not then generally acknowledged, they are now made manifest. England is not only at this time to a great degree dependent on the United States in commercial matters, but signs are significant that she considers her future fate depends on maintaining the most friendly relations with the United States, so that they would, from interest in commercial matters, and perhaps from a better feeling for their noble mother, *look with disfavor on any combination of the European powers to humble and crush her.*

France also gave evidence how much importance she attached to the maintenance of the most intimate relations in trade with this country, and how reluctantly, if at all, she would resort to hostilities with the United States. The King of the French, supported by public opinion, was enabled to overcome the opposition of the chambers to the payment of the amount stipulated by treaty to be paid for spoiliations on our commerce. This public opinion was especially expressed by numerous petitions, coming up from the great commercial and manufacturing districts of the kingdom, praying that the difficulties with America might be settled and peace preserved.

During the period extending from 1783 to 1812, considerable expenditures were made from time to time on the forts and batteries at the principal seaports, in anticipation of possible war growing out of the French revolution, and more recently in consequence of the continued aggression on our commerce by English cruisers; so that when war actually broke out in 1812 there was not a town of any magnitude that was not supplied with one or more batteries. Nevertheless, there were a great many small towns exposed without defence to the enemy, and were left unmolested by him, seeing that their destruction or injury could in no wise facilitate his operations, whilst such acts of vandalism would serve only to hold him up to the execration of the civilized world.

In the course of the war of 1812-'15 the defences of the country were considerably increased in value by the construction of field-works; and in no instance were such defences, supported by well-trained and patriotic volunteers, ever overcome. Attacks were made on Fort Boyer at Mobile, on Fort McHenry

at Baltimore, and on Fort St. Philip below New Orleans, and were successfully repelled. Our vessels-of-war were blockaded in New London, and chased into Marblehead and Boston, where they found security under the batteries. Castine was taken and held by the enemy, but being a point of no importance it was not retaken, for it served to detach a portion of the enemy's forces from operating at other points.

Washington was reached, and the Capitol brutally attacked and defaced. The success of the enemy, in this instance, was obtained less from the well-arranged plan of his operations than from the imbecility of the generals commanding the American forces rallied for the defence. The enemy was signally defeated many times, by sea and land, and the war was triumphantly terminated by the battle of New Orleans.

Thus was the country preserved intact, during a war of two years and eight months, against the operations of an enemy having the mastery at sea, and when the defences of the country were comparatively weak.

It should be here remarked that a large expenditure of money was incurred in consequence of the want of facile lines of rail, canal, or common way communications leading toward and along the northern, Atlantic, and Gulf frontiers, through which men, munitions, and machinery of war could be transported. Yet in face of these difficulties, movements were generally made when required, efficiently and with considerable promptness.

It was on account of the difficulty of wielding mobile forces for the defence of the seaboard and lake frontiers, rather than from any signal success obtained by the enemy against the ports and batteries, that it was determined at the close of the war to adopt a system of defence by permanent fortifications on a large scale. Under an excitement fed by the friends of the scheme, Congress voted large sums of money to be expended on works which were to be planned, principally, by a foreign engineer, with such help as might, perchance, be rendered by the native officers of engineers, some of whom had not altogether escaped distinction in the late war. A distinguished general officer of engineers in France, who stood high in the estimation of Napoleon, was engaged and received in service of the United States under the title of assistant engineer, with the rank and pay of a brigadier general. No protest against this arrangement was made by those officers of engineers whose rank and influence would have entitled them to be heard in opposition, if any was entertained by them. The acquiescence of these officers, if not amounting to approval, led Congress and the authorities to suppose that no serious disapproval of the measures adopted was entertained by them. Being thus negatively indorsed, it was considered that a good arrangement had been made by the government, by which a lack of skill in the native officers, unfitting them for the task of designing the grand scheme of defence, might be supplied by an importation from abroad.

Under the auspices of the foreign engineer, a scheme for the defence of the seaboard from Passamaquoddy to the Sabine was devised, involving a cost of many millions of dollars, and submitted to and approved by the government.

The progress of construction of the works under the new, or as it has been termed "the third system of defence," was not very rapid. The Gulf frontier being considered the weakest and most assailable was first attended to, and in about ten years the river and lake approaches to New Orleans, and the entrance to Mobile bay, were occupied by strong works. The commencement of new works of the system was, in the meantime, gradually extended to the north and south Atlantic coasts, and subsequently to all of the most important points along the Gulf and Atlantic frontiers. These defences, combining the repairs of old works with the construction of new ones, place the sea-coast of the United States in a better condition of defence than that of any other sea-coast in the world.

In planning the new works, it seems to have been taken for granted, in many instances, that each work must depend on itself, without chance of succor from

forces operating on the rear and flanks. Works were thus constructed, to sustain a siege from ten to fifty days, in the midst of a population from which relief to the invested work could be drawn in twenty-four hours. The expensive arrangement of these land defences have greatly increased the cost of the works, already from their nature very costly; and at this day excite the surprise of the professional examiner, acquainted with the vast means of collateral defence possessed by the United States, that anything more should have been required for most of the works, than security against assault by escalade.

The report to be made by the chief engineer of the United States, on the second resolution of the series before mentioned, will exhibit the exact condition of the works composing "the third system of defence," the number and strength of the works; the first estimates of cost; their extent, capacity, armament, and actual cost; and an estimate of the sums necessary to complete them.

This exhibition will prove what has been herein stated, *that the United States, at this time, possess the best fortified sea-coast in the world.*

Whilst the defence of the coast has been gradually accomplished in the course of thirty-five years by the construction of permanent, extensive, and expensive fortifications, new and important elements in the national defence and security have been rapidly, almost magically, developed. Our population has increased from 8,000,000 to 23,000,000. The progress of improvement in agriculture, manufactures and commerce, and in the facile lines of intercommunication necessary to meet the demands of the growing prosperity of the country, has advanced in a ratio even greater than that of the population.

The lines of communication, in combination with the electric telegraph, whilst they impart new life and vigor to the country, bring distant sections of it in easy correspondence with the centre, at once affording security against foreign aggression, and making the people more interested in preserving those glorious institutions under which, for seventy years, they have happily lived and prospered.

The interior and exterior commerce of the country have advanced with surprising strides. the latter has become so necessary to the leading commercial nations of the world, that its interruption would produce disastrous results to those nations. The stoppage of the supply of cotton following a war with the United States, would be attended in England by the most serious consequences to her trade and finances—consequences deemed by many as being fatal to the political institutions of that country.

In this brief review we have passed through three epochs: that of the revolutionary war; that of the war of 1812-'15; and that of the elapsed time from 1815 to 1851.

In the first epoch it has been shown that the power of England, although relatively greater than it is now in respect to this country, aided also as it was by a considerable portion of the inhabitants remaining loyal to England, was inadequate to subdue our people, or to retain any portion of our soil.

In the second epoch it has also been shown that though the national defence by permanent fortifications was weak in comparison with the present one, and the means for the operation of the mobile forces were limited and difficult in their use, the most formidable demonstrations of the enemy were easily defeated and the country preserved from any injurious attacks of the enemy, except in one or two instances.

And in the third epoch it is shown that, in the several international difficulties which have arisen with France and England, those powerful nations gave evidence throughout the pending negotiations, of their desire to maintain that pacific policy so essential to the prosecution of the commercial and manufacturing pursuits which have been extended so rapidly in their respective countries during the last thirty years.

This epoch, now of thirty-five years duration, is distinguished for the profound

peace which has been maintained throughout the civilized world without interruption, except in the instances of the Mexican war, and of some unimportant conflicts in Europe; and that whilst it has thus been distinguished, it is no less so on account of the wonderful progress made in the arts and sciences, by whose influence the character of nations and of their governments have been greatly changed for the better, affording new guarantees that the pacific policy, so long and profitably maintained by the leading commercial nations, will continue to be cherished toward all countries and toward ours in particular.

In view, then, of all these things, and especially of the new elements, moral, political, and physical, claimed to have been developed and to have greatly increased the power of the United States, *and which must be considered in relation to the future arrangement of the national defence*, the undersigned thinks that the general plan adopted thirty-five years ago should be essentially modified, by reducing the number and size of the works proposed to be constructed, and by abandoning some of the defences now in progress of construction, or which are about to be constructed under existing appropriations made by Congress.

The undersigned is also of the opinion that the best interests of the country require that the subject of modification should be submitted to a board composed of artillery and engineer officers, and some eminent civilians. That no new work should be commenced, even if it has been appropriated for by Congress; and that no appropriation should be made by Congress for the completion and repairs of existing works, until the whole subject of the national defence has been considered and reported by the said board.

The Secretary of War desires "that the chief engineer and the above-named officers (Colonel Thayer, Lieutenant Colonel De Russey, Major Delafield, and Major Chase) should direct their inquiries particularly to the following points:

"1st. How far the invention and extension of railways have superseded or diminished the necessity of fortifications on the seaboard?

"2d. In what manner and to what extent the navigation of the ocean by steam, and particularly the application of steam to vessels-of-war, and recent improvements in artillery and other military inventions and discoveries, affect the question?

"3d. How far vessels-of-war, steam batteries, ordinary merchant ships and steamers, and other temporary expedients can be relied upon as substitutes for permanent fortifications for the defence of the large seaports?

"4th. How far the increase of the population on the northern frontier, and of the mercantile marine on the northern lakes, can obviate or diminish the necessity of continuing the system of fortifications on those lakes?"

The results of the inquiries made by the undersigned in the premises, are expressed as follows:

1st. The invention and extension of railways and of the electric telegraph, in connexion with the great increase in the number and size of steam vessels navigating the rivers, bays, lakes, and ocean, have added greatly to the strength of the Union, by bringing the most distant sections within a few days' travel of the centre, and do thus contribute to preserve tranquillity at home and repel aggression from abroad.

The lines of railways, assuming the radiating point at New York, will shortly be extended to most of the important seaboard and inland towns in the United States. The telegraph lines following the rails, and also diverging from them, are beginning to interlace the country in every direction. By these means, and the rapid increase of our population indigenously and by immigration, agriculture and manufactures, have been surprisingly extended throughout our broad domain, and an internal commerce has arisen, by the interchange of the products of art and of our various climates, which is considered to be of greater value than the exterior commerce of the country. With the exception of a few articles.

our artificial and natural productions embrace everything that can be produced in any part of the world.

These are immense elements of strength to a nation, and insure its power and prosperity. This is the moral effect.

The existence of these railways and telegraphs contribute directly and physically to the defence of the country, by enabling men and military supplies to be collected promptly and moved rapidly to points threatened with invasion. Railways extend already along the coast, in some instances, in double lines, from Portland to Savannah, connecting all the intermediate cities and other important points with the canals and rivers and the naval and military arsenals and depots. From this great base line, other lines convergent and divergent, have reached lakes Erie, Ontario, and Champlain, and they are rapidly approaching and crossing the great lakes and rivers of the west. And it is hoped that Congress will not long delay, in conjunction with the State of Texas, in making such a donation of lands as will enable private enterprise to commence and complete a railway leading from some point between the mouth of Red river and New Orleans, through Louisiana and Texas to El Paso, and thence through the valley of the Gila to San Diego, in California.

A single example of the pervading extent of the railway system will at once illustrate the subject, and exhibit in a favorable light these new means for the national defence. The completion of the railway now in course of completion, from Wilmington, in North Carolina, to Manchester, in South Carolina, will enable troops to be transported continuously, by railway, from the valley of the Tennessee to Norfolk in *two days*, to Washington in *two and a half days*, and to Charleston and Savannah in *one day*. The extension of the railway now being made from Chattanooga, on the Tennessee river, to Nashville, will enable the volunteers from the superb military population of Tennessee to be carried to the most distant points of the north and south Atlantic, almost at a moment's warning, and in the course of three or four days; whilst the speedy completion of the road from Atlanta, in Georgia, to Montgomery, in Alabama, and the probable construction of a road from Montgomery to Mobile and Pensacola, will bring the Gulf of Mexico within a day's travel of the same great State of Tennessee.

At the north the system of railways is much more extended. The New York and Erie road, now complete, is proposed to be extended along the shore of Lake Erie to Cleveland, and thence to Detroit, from whence a road has been carried to Chicago, on Lake Michigan. The seaboard base of railways will thus be brought within easy communication of the most distant lake frontier.

The Massachusetts, Vermont, St. Lawrence, and Montreal railways will bring the whole Canada frontier, extending from Lake Ontario down to Montreal, within twenty-four hours' travel, on an average, of Boston, Portland, and New York.

The transportation of troops on railways may be effected with great promptness. The first regiment of Pennsylvania, raised in Philadelphia, the most distant point from the scene of action, were transported so rapidly to New Orleans, *via* Pittsburg and the Pennsylvania railways, that the regiment, one thousand strong, was placed in the van of the volunteer forces, raised for the campaign against Mexico, under General Scott.

Sufficient has been said to show that railways and the electric telegraph contribute largely to the national defence; that the works covering our large seaports and other important points, placed in connexion with the railways and telegraph, if they were now to be constructed, might be much reduced in size and cost, if not in number; that the facility with which these works could be relieved, in case of an attempted siege, would have rendered it only necessary for them to be made secure against a *coup-de-main*.

Under these views of the subject, it is at once perceived that, whilst the ex-

tension and invention of railways and the electric telegraph do not supersede, they greatly diminish the necessity of adding to the number and cost of the fortifications on the seaboard; or, in other words, that the future prosecution of the system of defence by permanent fortifications should be on a very reduced scale in comparison with the magnificent one adopted thirty-five years ago.

2d. The navigation of the ocean by steam, and the application of steam to vessels-of-war, have certainly added to the facilities of naval operations in making attacks and transporting troops. But such operations are necessarily confined to short lines, like those between France and England, in the Mediterranean, or on the lakes between Canada and the United States.

Attacks by steamers can only be formidable when they are numerous and filled with troops destined for a grand attack; but when they are thus filled with troops, munitions of war, provisions, armament, and their regular crews, little room is left for the fuel necessary to propel them to the scene of action and in retreat. Such steamers cannot be propelled either conveniently or rapidly until the propelling power can be produced at a less outlay for fuel. At the rate supposed to be the maximum of speed of war-steamers, lines of operations over one thousand miles (five hundred in advance and five hundred in retreat) cannot be occupied advantageously, or with the efficiency necessary to a great movement of a strategic or direct attack. Numerous transports would be necessary to convey supplies of coal to convenient places on the coast, where depots for the same would have to be established and defended at great cost, for they would be constantly in danger of attack by sea and land from enterprising assailants. Besides, the great loads of men, munitions, armaments, provisions, and fuel that war and transport steamers would be obliged to carry, multiply the dangers of navigation.

Certainly steamers could make sudden and brief attempts to enter harbors and destroy towns, but fast-sailing ships with favorable winds could do the same, if this kind of marauding and piratical warfare was carried on by any Christian nation calling itself civilized, and if not opposed by the same machines of war as those used by the enemy and by acts of retaliation.

Such attempts might be successful in attack and retreat, if made in the night, even if the harbor was strongly fortified, if the fortifications were unaided by rafts and hulks lying across the channels.

But a demonstration on a large scale against the important ports and arsenals, for the purpose of taking possession and levying contributions, requires considerable land forces, even against such points as were not defended by batteries, for at such points, in time of war, earth erections would be made and easily supplied with cannon of heavy calibre, that would do great damage, by direct and vertical cannonade, to the enemy's vessels and forces afloat after they had entered the harbor, and probably compel them to leave it, and force him to select a more distant point for the initiative of attack.

If the enemy, strong in ships and soldiers, could be driven from Boston by the erection of some redoubts in the course of one night, it is hardly to be supposed that he would attempt to recapture the position, or to attack any other position similarly situated.

Any such demonstration at the present day would be checked by the means just enumerated, and be met on its flanks and in front by the mobile forces rallied by the telegraph to the point of attack.

The improvement in artillery, as regards size and efficiency, has been of late years very great, but it inures more to the benefit of the defence than the attack. In the same way that, if steam applied to ships-of-war afford any advantage to the attack, steam applied on railways, combined with the electric telegraph, affords greater advantages to the defence, by reason of the greater facility with which forces may be moved by the latter means.

From all which it may be safely asserted that the navigation of the ocean by

steam, the application of steam to vessels-of-war, and recent improvement in artillery and other military inventions, do not exhibit the attack of forts on the seaboard superior to the defence, where those forts are connected with railways and are brought within succor of the surrounding population, nor do they render additions to the present fortifications in number, size, or cost in anywise necessary. But, on the contrary, the improvement in artillery, if those fortifications had now to be built, would enable their plans to be reduced *one-half* in size and the armament *one-fourth* in amount.

The substitution of the 10-inch columbiad for the mixed and most inefficient armaments with which our fortifications have been garnished at great expense, is already forced upon us by the introduction of those superb guns on board of vessels-of-war. It would be ridiculous, if it be intended to adhere in any degree to the present system of sea-coast defence, to retain the present armaments, composed principally as they are of 12, 18, 24, 32, and 42-pounders. It is the opinion of many persons, entertained for years past, that but one class of guns should be generally used in our batteries on the coast, and that these guns should be of the largest calibre which experiment has demonstrated could be efficiently used.

Fort McKee, in the harbor of Pensacola, is supplied with one hundred and twenty guns, composed of about equal numbers of 24, 32, and 42-pounders. The average effective range of these guns may be stated at 1,100 yards, and the weight of metal that may be projected from the entire battery at 3,920 pounds. Now *thirty* 10-inch columbiads would throw the same weight of solid shot and strike an object with precision at 2,200 yards distant; so that whilst the number of guns at Fort McKee might be reduced seventy-five in one hundred, the effective range by solid and hollow shot would be increased one hundred in one hundred, and the efficiency of the batteries greatly increased, at the same time the size of that work might be reduced at least one-half.

3d. Our large seaports and naval depots being already covered by extensive works, and requiring but small additional defences, the discussion of the question as to the superiority of those defences over vessels-of-war, floating batteries, ordinary merchant vessels and steamers, and other temporary expedients, would seem to be unnecessary. All experience, however, has shown that any kind of floating defences is inferior, on every score, to land batteries where the localities will permit the latter to be used. This subject has been ably discussed and illustrated in the report made by a board of officers to the Secretary of War in 1840, on the national defences. Other temporary expedients, such as rafts, hulks sunk in channels, and ridges of stone thrown across the same, could be relied upon, in most instances, only as auxiliary defence to land batteries.

4th. In considering how far the increase of population on the northern frontier, and of the mercantile marine on the northern lakes, obviates the necessity of continuing the system of fortifications on those lakes, it will be necessary to bring into view some of the elements of strength, moral, physical, and political possessed by the United States, and which have already been alluded to in this report.

The chief moral and political element is the aversion to war with the United States felt by Great Britain, whose present superiority in naval means of attack makes her, of all nations, alone formidable to us. This aversion arises from the intimate and *entangling* relations in commerce with this country, and from the dependence of England upon the United States for the chief supply of cotton to the leading branch of her manufactures. And this aversion to the slightest approach of international hostility is not abated by the consideration that the untoward event of war with the United States would prompt Russia and France to carry out their long-cherished designs of aggrandizement in Turkey, Syria, and India.

The principal physical elements are: first, the facility with which, by means

of existing railways, we could approach Montreal with a large force, and drive thence the British forces to seek shelter under the walls of Quebec, and finally from all Canada; by which simple and rapid movement the two provinces would fall without a struggle into our possession, with one-half of its population, at least, inclined to a change of sovereignty; and second, the superiority of our mercantile marine, affording convertible means for a naval force, giving us the mastery of the lakes, and enabling us to crush any partizan attempts coming from the Canada shore; and third, the superiority of our advantages on the score of a military population lying along the whole northern and lake frontier.

These great moral, physical, and political advantages being undeniable, the continuation of the system of fortifications on the northern and lake frontier would involve a useless waste of public money.

The large sums of money expended and proposed to be expended on the defensive works extending from Rouse's Point to the Sault of St. Marie would have been, and will be more beneficially applied to the improvement of the lake harbors and dependent rivers, thus promoting the interests of commerce in time of peace, and affording depots for our naval forces in time of war.

By demonstrating that such an application of the public money would directly promote the national defence, not only on the lakes, in substitution of fortifications, but on the seaboard, in aiding the defence by fortifications, much of the opposition entertained, on constitutional grounds, towards internal improvements, would be removed.

Under these views, it is the opinion of the undersigned that the whole system of fortifications for the defence of the northern and lake frontiers should at once be abandoned, and that no more money be applied even for the repairs or completion of the existing works.

The undersigned, in conclusion, would express his opinion in repetition, that a board of artillery and engineer officers and civilians should be formed to take into consideration the whole subject of the national defences, as called for by the resolutions of the House of Representatives, passed in the session of March 3, 1851, and as particularly and searchingly alluded to by the Secretary of War, in his order of April 17, 1851, with a view to the changes necessary to be made in "the third system of defence," commenced thirty-five years ago; and of the adaptation of the same, *inversely*, to the increased power, political, physical, and moral, of the United States.

The composition of such a board being well calculated to have the whole subject opened fairly and discussed freely, by which errors of opinions, particularly those arising from professional prejudices and interests, would be exposed and corrected, the truth in the premises made manifest, and the good of the commonwealth secured.

Civilians versed in national and international policy, and officers known to be opposed to the system of defence on its present scale, as well as those who have declared in its favor, would cause the *pour* and *contre* to be fairly stated, and all sophistry and false principles to be detected and discarded.

In the event of such a board being formed, it is suggested that the *ayes* and *noes* on all important questions should be ordered to be taken and recorded.

Respectfully submitted,

WM. H. CHASE,
Major of Engineers.

Hon. C. M. CONRAD,
Secretary of War.

No. 10.

Report of Major R. Delafield.

Views and opinions of Major Richard Delafield, of the corps of engineers, on the following points connected with the defence of the coasts of the United States, called for by the Secretary of War in his communication of the 17th of April, 1851:

1st. How far the invention and extension of railroads have superseded or diminished the necessity of fortifications on the seaboard?

No member of the corps of engineers, so far as I am acquainted, has ever considered it expedient to construct *permanent* fortifications along our *seaboard*, to defend it against armies operating on the land. The art of fortification, in such an emergency, is principally confined to temporary field-works, thrown up after the enemy has effected a landing, and selected his route of approach.

Such fortifications are only needed to oppose infantry and field artillery, requiring little less than earth for their construction, and executed by the troops in the field, and with a few days' labor.

To the more speedy accomplishment of this particular, in the defence of the nation, railroads have contributed greatly.

Fortifications of a *permanent character*, requiring a long time to construct and perfect, are, however, considered indispensably necessary to prevent the ingress of the powerful floating batteries that can sail or steam into our harbors, against which railroads can oppose, neither directly nor indirectly, an efficient resistance.

The city of New York, for example, is within three hours' sail of the ocean. Ships-of-war of the heaviest class, and war steamers with troops, can come to the docks of this city, or lay at anchor in the East and North rivers, and do as much injury and destruction as may suit an enemy's purpose. Now, although several railroads centre in this city from distant and most populous sections of our country, they can bring nothing to prevent the entrance of a maritime force. No number of men that can be concentrated in New York, or along the shores of the water approaches, however well disciplined they may be, can oppose, with any probability of success, the passage of a hostile fleet from the sea to the city, or prevent its destroying its mercantile marine and real estate. Field artillery, infantry, cavalry, and riflemen can have no effect upon ships-of-the-line; and the increase of numbers would but swell the loss of our citizens by uselessly exposing them to a ship's broadsides.

The many thousands of uniformed militia that could, within forty-eight hours, be concentrated by railroad and river steamers in New York and its vicinity, could do positively nothing in arresting a hostile fleet from destroying the city.

It will be asked, then, are railroads of no value or use in the defence of the sea-coast? Most certainly, they are a valuable auxiliary; economizing time and treasure, and preventing many a predatory expedition that an enemy might otherwise undertake.

Landings for supplies of provisions, water, or for any hostile purpose against all the cities and towns of the Union, are rendered much more difficult and hazardous to an enemy. Ere he can effect a landing, march to the city, and destroy or lay it under contribution, the railroads and river steamers could transport from hundreds of miles the uniform militia of the country in far greater numbers than any fleet can be expected to bring across the ocean; *provided*, we can cause such landings to be made at such a distance from the cities as to give time for the railroads and steamers to transport the militia after they are assembled. In all such landings an enemy can have no other description of force than *we* can bring to oppose him. He has, in such case, been compelled to leave his heavy battering ships.

But so long as he could reach the cities in his ships, he never could throw the advantage in our favor by landing, unless the distance to march was within a few hours' march of his landing.

There is, then, no other permanently reliable, economical, and efficient means of preventing the approach and entrance into our harbors of these ships' batteries, whether sailing or steam, than by opposing them with similar and superior batteries, and compelling the ships to fight the batteries by temporary obstructions in the channels—locating these batteries at the greatest distance that can be found to protect the channels. Such batteries are but *fortifications*. In their construction we must arrange them for the heaviest class of guns, to secure their action at the greatest distance, and to produce the greatest injury to ships-of-the-line or steamers.

That the troops manning these batteries may not be exposed to the ships' fire, they must be covered in front by earth or masonry, and either placed so high that from a ship's deck, thirty feet above water, they cannot be looked into, or else must be covered over head to secure the gunners. Where the site is not naturally high enough for this purpose, we gain it by masonry, which introduces the construction known as a casemated battery. Once forced to this mode of construction, economy prompts us to put tiers of guns over each other.

But these batteries, however well calculated to protect the men at their guns, must be enclosed in the rear; otherwise, the marines of a fleet could land, pass into them and drive the artillerists from their guns.

This makes an enclosed battery or fortification, and upon these alone can we depend to protect our harbors, cities, dock yards, &c., economically and efficiently.

These enclosed works must be of such a nature that there shall be no one point outside that cannot be seen from some point within, of such a height that they cannot be scaled by an active and disciplined force, and so strong that field artillery cannot destroy them, which gives time for the militia of the country to march to their relief, and force back any troops that may have landed to take them.

The great change brought about by railroads and river steamers in our system of defence is in lessening the artificial strength of the land defences of the sea-coast fortifications. Just after the war of 1812 to 1815, it was considered necessary to give them such strength as to require as many days for their reduction as would suffice for assembling the militia in mass and marching to the relief of the forts.

The time of taking a well-constructed fort, properly defended, is a matter of calculation, when its strength is such as to compel the forms of a siege. The basis of this calculation is the excavation and removal of a given quantity of earth, and the landing, mounting, and serving a given number of heavy guns. The guns are to be mounted on the edges of the ditches of the forts, and this can only be done by what is termed zigzag approaches, constituting a siege. At the period above referred to, there were few positions in the United States that did not allow time for an enemy to land, and take, in the above manner, an ordinary bastioned front, ere the militia of the country could come to its relief in sufficient numbers to contend with disciplined forces.

But at the present time we have but to fulfil the condition of strength on the land side to resist a coup de main or escalade, thereby forcing an enemy to bring up a battering train for its reduction, and we gain the time necessary for its relief. We now need no second line of defence—a simple flanked scarp, covered with earth, suffices. Herein is the great difference brought about by railroads, that of reducing the magnitude and expense of the land defences of the sea-coast batteries. But the power of the batteries themselves, it will be seen hereafter, must be stronger than ever.

2d. In what manner and to what extent the navigation of the ocean by steam, and particularly the application of steam to vessels-of-war, and recent improve-

ments in artillery and other military inventions and discoveries affect this question?

The navigation of the ocean by steam has had a great influence upon the defence of our seaboard. "The heavy armament of war steamers, their ample storage and accommodation for troops, the rapidity of their evolutions and facility of transport, altogether constitute them convenient and formidable instruments for *offensive warfare*, particularly for making a descent upon any line of coast with a powerful army. Since 1815 it has enabled seamen to set the elements at defiance, and this would lead hostile powers to consider us more open to invasion."

Before its introduction, it required an immense marine and long time for preparation ere an enemy could effect an invasion of our shores. The expedition fitted out by England against New Orleans was known by us to be in preparation, for some part of our coast, six months before its arrival. After sailing, it had to rendezvous at Jamaica, (from whence, also, we heard of its concentration,) and again at Ship island, before commencing to disembark. This gave much time for us to prepare. At that date we may be considered as having had six months' notice of an intended expedition.

At the present time, with the aid of steam, the notice comes with the blow; a few days now suffices to invade either Boston, New York, Philadelphia, Baltimore, Norfolk, Charleston, or Savannah, from Bermuda. It is the introduction of steam navigation that has given such an advantage over us, compared with the sailing vessels of 1815.

In 1812 Great Britain considered Halifax a suitable place for her naval depot, and stores for her fleet on our coast. It so continued until a recent date, when they discovered that our proximity by land enabled us to reach and destroy it, beyond their power to prevent it. The consequence has been, that a central point opposite our Atlantic seaboard (Bermuda) has been selected, fortified, and still being fortified with great care and strength, and fitted as a naval depot. To it, already, have all the naval stores been removed from Halifax. It is secure against the power or force we can most readily command, (an army,) and, by fortifications, is secure against any naval armament we are likely to possess.

From this point an army can embark in steamers, and in three days be anchored in our harbors, without any other notice than their coming in sight of our headland, but not long enough to enable us to draw together militia to oppose them. Hence it is that we are comparatively weaker, at this time, by the introduction of steam navigation.

Another important facility to an enemy, and to our disadvantage, is gained by the steamship. Fifteen such vessels as have lately been built will carry an army of ten thousand men, with their munitions, to any point on our Atlantic coast in a *given space* of time, and without any necessity for other rendezvous than the point of attack. Whereas, some hundred sailing transports would be required for the same army, and no calculation made of their arriving at their destination within days of each other.

The defences of the coast of France and England, on the channel, forcibly illustrate the change effected by ocean steam navigation. England considered herself safe from invasion, by the strength of her *channel fleet*. France considered herself equally safe, by the fortifications of her harbors. For a long period neither power could injure each other, guarded as they were. The fleets of England made many demonstrations upon the coasts of France, but never effected anything of importance, and Napoleon made a powerful combined demonstration with his army and fleet, and failed by the superiority of the English fleet.

But since steam has risen to its present importance, these two nations are considered as having materially changed their relations of defence.

France, with her preponderating land force, transported by steamers, can

readily invade England. The channel fleet of old would no longer be a protection. The statesmen of England, fully aware of this state of things, have for some time past been endeavoring to restore their ascendancy.

A channel fleet combined with the aid of fortification, "which experience in war and science can suggest," (Duke of Wellington to the chief engineers,) is now their reliance, but it is a fleet of steam ships-of-war. Several of their ships-of-the-line have been fitted with screw propelling engines, as an auxiliary power, retaining the sails and their *powerful broadsides*. The first ship built in the English dock yards of this class is the *Sanspareil* of eighty-one guns, 2,235 tons; carrying on her lower deck thirty 32-pounders of fifty-six hundredweight, nine feet six inches long; main deck, thirty eight-inch guns of fifty-two hundredweight, eight feet long; quarter deck and forecastle, twenty 32-pounders of twenty-five hundredweight, six feet long, one ten-inch gun of eighty-four hundredweight, nine feet four inches long, with a three hundred and fifty horse-power engine, launched at Davenport in April, 1851. With vessels of this description they hope to retain their ascendancy on the water, and protect their ports, in the absence of the fleet, against sudden attacks of an enemy's steamers, by fortifications.

In relation to the application of steam to ships-of-war, up to the building of the above vessel, the problem had not been solved. Not a single steamship had been built calculated to contend with a land battery, or a broadside of a ship-of-the-line. We have not, to this day, an instance of steamers having exposed themselves successfully or for any determined purpose to hostile guns, with the exception of the little English iron steamer *Nemesis* in the Chinese war, where she accomplished much, but against batteries of no value.

As transports and tow-boats, they have contributed greatly to the success of fleets on the invasion of Algiers by the French under Beaumont; the fleet was towed into position abreast the Algerine batteries by their war steamers. At Vera Cruz they made the same use of their steamers—at Beyrout, on the coast of Syria, although the English had the best of their war steamers, they were only used as tow-boats—taking distant stations in the latter part of the action and shelling the fortification.

The French army that recently operated against Rome was transported from Toulon by steamers, carrying artillery, cavalry, and infantry.

The result, then, of the navigation of the ocean by steam goes to prove a greater necessity than ever for defending our cities, harbors and dock yards by some efficient means, whether by fortifications, steam vessels-of-war, or other means, is yet to be considered.

The next branch of inquiry under this second head is: "In what manner and to what extent has the recent improvements in artillery and other military inventions and discoveries affected this question?"

The recent improvements in artillery, I apprehend, are rather the result of calling old things by new names, and thus bringing them afresh into notice than any substantial advantage.

The use of what is generally called the Paixhan gun is supposed to have produced a great revolution in the sea-coast defence. It is no more nor less than firing hollow shot horizontally, a practice that has prevailed as long as the howitzer has been known (about 1693.) The only difference between the field and siege howitzer and Colonel Paixhan's gun is, that he makes his gun longer, and, by his writings, has caused them to be introduced *again* on board ships-of-war, and probably more used for sea-coast batteries.

In our own service we had made use of such long howitzers for sea-coast defence years before Colonel Paixhan gave anything to the public on the subject.

We called them columbiads, many of which are now to be seen on Governor's island, in this harbor, that were in use from 1812 to 1815.

On the ocean the use of hollow shot fired horizontally was made by the Count

De Grasse, off the Chesapeake, during our revolutionary war, and abandoned in consequence of the serious injury caused by the accidental explosion of the shells about the decks.

Since their re-introduction similar results have occurred. The steamer *Medea*, one of Admiral Stopford's fleet, operating against the Egyptians in 1840, when off Alexandria, was seriously injured by the bursting of a shell that, with five others, had been got on deck for examination; one beam was split asunder, the whole deck raised, and every buckhead in the captain's cabin, ward, and gun-rooms torn to shreds, and the vessel set on fire.

About the same period (December, 1840,) a similar accident occurred on board the *Excellent*, the gunnery ship at Portsmouth, on trying some shells *after hearing* of the accident on board of the *Medea*. The fuses, in both cases, were metal with screw caps, supposed to be a secure preventive against accidents on board vessels. The use, therefore, of this improvement in artillery, for steamers, and on board ships-of-war is, I conceive, quite problematical, while, on the other hand, its value in the sea-coast batteries is increased by the greater ranges, precision of fire, and facility of causing the explosion about the intended and critical moment.

While such shells fired from ships against stone walls and earthen parapets are harmless, breaking to pieces in the one case, and throwing up a few yards of earth only in the other, the injury to the steamer or ship is far greater than from any other artillery in use.

It may not be amiss, under this head, to show the effect of this species of artillery upon vessels, proving, as I think, very conclusively, the safe reliance we may have in defending our harbors by them if mounted in favorable positions.

The effect of hot shot and shells from these columbiads (I must be permitted to use the American name as of prior invention) against shipping was shown by Captain Hastings, in the service of the Greeks, who, at Salona, in 1826-'7, fired not only hot shells, which he substituted for hot shot, as by their weight they broke through both sides of small vessels, but he fired carcasses and shells from 68-pounder guns. During the affair at Salona, he says, by the time he had fired twice, a brig-of-war blew up, owing to a shell exploding in her magazine. An armed transport brig sank forward owing to a shell exploding in her bow, and was set on fire aft by a hot shell. At Trickere he burnt a brig-of-war with hot shot. During an attack of the Greeks against a monastery at Pinæus, within the straits between Salonia and Megara, and for the relief of Athens, the Turkish pacha opened a battery of five guns upon the Greek steamer *Perseverance*, two of them long five-inch howitzers, producing considerable effect. One shot struck the carriage of a long 68-pounder and exploded there, another exploded in the counter of the *Perseverance* and tore out two streaks for a length of six feet, and started out the planking from two adjacent streaks, when the steamer retreated from this dangerous position.

In the attack on the harbor of Tolo, the Greeks directed the fire of 68-pounders' shells on a brig—a shell struck her, exploding in her hull and blew her foremast into the water. They afterwards made an attack upon a Turkish squadron of nine vessels, and opened a fire upon the Turkish admiral's ship, distant about five hundred yards, with hot shells. The second fire of two hot shells from the long guns and two carcasses from carronades, one lodged in the hull of the Turkish commodore, and, reaching the magazine, blew her up. A carcass shell exploded in the bows of a brig next to the commodore; she sank forward, while a hot shell striking her stern, which stood up in shallow water, soon enveloped her in flames. In a few minutes another vessel was on fire, and an Algerine vessel having received a shell, which exploded between decks, was abandoned by her crew.

In the harbor of Patras, the Greeks made an attack upon an Austrian brig loaded for the Turkish army, by opening upon her a fire of shells from 68-

pounders; one of them exploded in her hull near the water's edge, tore out a great part of her side, when she sank almost immediately.

All these results are calculated to show the effect of hollow shot fired horizontally from what is generally called Paixhan guns against shipping, and proves the efficacy of sea-coast defences armed with such artillery.

Of the effect of such a fire against forts, from ships or steamers, I recall to mind that of the French fleet under Joumanville, against the castle of St. Juan d'Ulloa, when a shell entering an embrasure, passed into a magazine through an unprotected door, and blew it up.

In 1840, the steam frigates Phoenix, Stranbole, Gorgon, and Vesuvius, were of the fleet that made an attack upon St. Jean d'Acre. They shelled *the town* with long guns, from positions beyond gun-range of the batteries, during the attack by the ships-of-the-line, keeping beyond the range of the shore batteries.

During the Carlist war, in Spain, several English steamers presented themselves against the land batteries, but retired on receiving the first fire from the land.

Other than the several instances herein referred to I can recall to mind now, and they all go to show that the use of columbiads is a most reliable means of protecting our harbors against ships or steamers.

Another improvement having a bearing on this subject is that of submarine artillery. Fulton's efforts with torpedoes were of little avail during his lifetime. The attempts upon the English ship Plantagenet, in Lynnhaven bay, and upon Admiral Warren's fleet, off New London, during the war of 1812 to 1815, which proved abortive, are the only instances I am aware of with these machines. Since his death, however, a new agent—that of electro-galvanism—has come into use, enabling us to explode a shell or magazine of powder under water at any particular instant of time. This power may be made auxiliary in the defence of our coast, in the channels over which hostile vessels must pass in approaching our cities; but it can only be of use in connexion with forts, from which the electro-agent is worked, and from whence to protect the torpedoes until the proper moment of using them, as well as from whence to ascertain the exact instant of time in firing them. An undefended position will not admit of their successful application. It is an uncertain auxiliary in the defence of our ship channels, yet one that would be resorted to by officers acquainted with its advantages. Gutta-percha elastic tubes, within which the wires may be protected, is another modern invention, facilitating the use of the electro-galvanic mode of instantaneous explosion.

The effect of the railroad is to economize greatly the military resources of the nation, by relying upon a much smaller disciplined force to act against hostile landings. For example, the same troops that would operate against a hostile army moving on Boston, would suffice to act against the same force that should afterwards attempt to march upon New York, Philadelphia, or Baltimore, or Washington. Before their transports could pass from one to the other, the railroad could transport the army to oppose them.

It is a knowledge of an enemy's movements only that is necessary to enable us to take advantage of the railroad speed of transportation; and here the more recent discovery of the electro-telegraph comes into valuable use. But there is nothing in these inventions or improvements that lessens the importance and necessity of opposing the powerful floating armaments that can be brought against us by equally powerful batteries; for let me again repeat, that a myriad of men, with rifles and other small arms, is nothing against a ship's broadside.

One other change in modern artillery deserves to be noticed: During the last half century the calibre of the guns mounted on board ships-of-war has greatly increased, and made it necessary to increase the power of the batteries that may be constructed to oppose them. Objections have sometimes been taken to the power of our sea-coast batteries; a little reflection will, I doubt not, show the

necessity of their being made equal, in all respects, to the batteries by which they can be assailed.

From 1776 to 1783 frigates of thirty-two, twenty-eight, and twenty-four guns mounted twelve-pounders on their main deck.

In 1800 most of the English frigates mounted twelve and eighteen-pounders. In February of that year the admiralty ordered all ships of twenty-four and twenty guns to be fitted on the main deck for thirty-two pounder carronades, in lieu of the long NINE-POUNDERS hitherto carried.

The Danish forty-gun ship *Freya* mounted eighteen-pounders. The Danish vessels at Copenhagen, attacked by Nelson, mounted—

Forty-eight thirty-six-pounders.

Three hundred and sixty twenty-four-pounders.

Seventy eighteen-pounders.

Ninety-eight twelve-pounders.

Fifty-two eight-pounders.

Nelson's fleet mounted—

One hundred and forty thirty-two-pounders.

Seventy-four twenty-four-pounders.

One hundred and ninety-two eighteen-pounders.

Twenty-two twelve-pounders.

One hundred and fourteen nine-pounders.

Six six-pounders; together with carronades.

1805. The *Victory*, Nelson's flagship at Trafalgar, mounted on her first deck, long thirty-two-pounders; second deck, long twenty-four-pounders; third deck, long twelve-pounders; quarter deck and fore-castle, twelve-pounders, and two sixty-eight-pounders, carronades. The French admiral's ship, in the same action, mounted thirty-two and eighteen-pounders; thirty of the eighteen-pounders on her upper deck. The *Tarinant*, of ninety guns, mounted eighteen-pounders on her main deck. The *Belle Isle* has twenty-four-pounders on her main deck. The *San Ildefonso* had fifty-eight long twenty-four-pounders on the first and second decks; four long eight-pounders and ten thirty-six-pounders, carronades, on the quarter deck and fore-castle.

1808. The *Caledonia*, English ship of one hundred and twenty-two guns, launched this year, mounted on first deck, thirty-two-pounders; second deck, twenty-four-pounders; third deck, eighteen-pounders; quarter deck, twelve-pounders and thirty-two-pounders, carronades, and the same calibre on the fore-castle; on the roundhouse she carried eighteen-pounders.

1811. France had no frigate, and England only four that carried long twenty-four-pounders, at this date.

1820. At this date France ordered *thirty and thirty-two-pounders for all their ships-of-war*.

1839. Finally, the English, on the 20th of February of this year, ordered all her ships-of-war to be armed with thirty-two and sixty-eight-pounders.

1851. By referring to another part of this memoir, it will be seen that an eighty-one-gun ship-of-the-line is now mounted with the tremendous battery of thirty-two-pounders and eight-inch guns.

This regular increase demands, on our part, a like armament, and that we relax nothing in the artillery for the defence of the coast, requiring more time to build, and stronger works to receive and resist such artillery.

3d. How far vessels-of-war, steam batteries, ordinary merchant ships, and steamers, and other temporary expedients, can be relied upon as a substitute for permanent fortifications for the defence of our large seaports?

It follows, from what has been said under the two previous heads, that a nation may rely upon a navy as a substitute for fortifications, in a great measure, for the defence of not only her large seaports, but for her coasts generally.

The two cases of France and England exemplifying that either a fleet or fortifications have heretofore sufficed.

The great question that arises, in adapting the one or the other exclusively, will be the cost, the efficiency at the eventful moment, and the consequences, in a political point of view, of directing such immense resources as dependence upon a fleet would require to a system that has its advantage in throwing the evils of war from our shores at the same time that its success brings a spirit of conquest and aggrandizement, limited only by the extent to which the nation may be led by the glory its arms shall achieve.

My opinion is, that sound policy calls upon us to adopt the mixed system of permanent batteries in conjunction with ships-of-the-line and war steamers.

If we adopt a floating system, we must make ourselves superior afloat to our enemy. Every seaport and dock yard must be provided with its own floating batteries, available for its waters and adjacent shoals. The great estuaries leading into the heart of the country must each be watched and protected. The floating defences that will protect Boston cannot secure the Hudson, Delaware, Chesapeake, southern coast, Gulf of Mexico, and Pacific, at one and the same time. Nor can we place reliance upon our superior fleet blockading our enemy in his ports. The fallacy of this reliance is exemplified by the sailing of the Yavlan fleet and transports no less than three times without being perceived, and being afloat in the narrow sea of the Mediterranean fifty-two days, notwithstanding all the watchfulness of the English fleet; a single detachment of the enemy's fleet escaping the blockade, sails for any of our harbors, where it must be met either by floating or land batteries. Hence, we have no alternative but a decided superiority, if we place reliance upon floating batteries.

These floating defences are of the most perishable character, and enormously expensive in first cost and repairs, compared with land batteries. To have some idea of the cost of fleets, let us look to the history of Europe.

The French estimate that a ship will last but twelve years; and to have forty ships-of-the-line and fifty frigates in commission, it is necessary to have fifty-three ships-of-the-line and sixty frigates, so great and constant are the necessary repairs. The fact was stated to the French Chamber by C. Dupin, as deduced from their own experience.

The cost of maintaining the French fleet annually, from 1689 to 1789, was averaged.....	\$7,808,000
From 1776 to 1783 was averaged	19,400,000
“ 1783 to 1786 it was	12,600,000
For the year 1797..do	16,700,000
“ 1805..do	28,000,000
“ 1808..do	22,000,000
“ 1814..do	10,200,000
“ 1816..do	9,600,000
“ 1818..do	8,640,000
In 1837 the Chambers voted	10,800,000
In 1847.....do	18,053,908

The cost of maintaining the navy of the United States for forty-one years, from 1792 to 1832, inclusive, was \$112,097,122, giving an annual average of	\$2,734,076
From 1812 to 1815, inclusive, it amounted to	26,376,215
The annual average being (four years).....	6,594,053
From 1831 to 1837,.....	31,393,151
The annual average being (six years).....	5,232,191

The cost of maintaining the navy of Great Britain, from 1799 to 1851. (not including 1841 to 1844,) a period of forty-one years, amounts to the sum of

\$2,283,645,277

The annual average being (forty-nine years).....	\$46,604,284
From 1799 to 1815, fifteen years of war.....	1,356,248,803
The annual average being.....	79,779,341
From 1816 to 1851, not including 1841 to 1844.....	927,395,437
The annual average being (thirty-two years).....	28,981,106

These enormous sums enable us to form some judgment of the gradual increase in the annual expenses of maintaining a navy, and the expenses in periods of peace, compared with war. Now let us examine into the magnitude of the fleets of Europe, at different points, to form some idea of the number of ships we must have to secure that superiority that will justify our reliance upon floating defences.

The French fleet, by no means the strongest we are likely to contend with, consists of the following number of large ships at the period stated:

In 1789.....81 ships-of-the-line, and 69 frigates.

March, 1791.....	73.....do.....	67.....do.
Dec., 1791.....	86.....do.....	78.....do.
" 1792.....	82.....do.....	68.....do.
Feb., 1793.....	75.....do.....	59.....do.
" 1801.....	39.....do.....	35.....do.
June, 1814.....	73.....do.....	41.....do.
" 1817.....	68.....do.....	38.....do.
" 1827.....	59.....do.....	51.....do.
" 1828.....	59.....do.....	51.....do.
July, 1829.....	33.....do.....	41.....do. only.

At this date she was building eighty ships to restore her navy and replace the rotten and decayed ships.

In 1837 she had one hundred and fifty-three ships afloat, and in 1847 she had two hundred and sixteen ships afloat, sixty-six of which were steamers.

The study of the above shows the losses that the vanquished have to sustain from time to time—an item to be more particularly stated hereafter.

The following table gives a more enlarged view of the strength of the different naval powers:

Fleets of the different nations in 1783, 1793, 1829, and 1840.

	England.	France.	Spain.	Holland.	Sweden.	Russia.	Turkey.	Portugal.	United States.
1783.									
Ships-of-the-line.....	106	80	50	32					
Ships of fifty guns.....	13	7	3						
Frigates.....	132	103	48	28					
Ships-of-war.....	217	86	31	13					
Smaller vessels.....	88	34	25	6					
	455	319	160	79					
1793.									
Ships-of-the-line.....	153	86	76	49	30	60	39		
Frigates.....	149	78	56	38	11	57	21		
Smaller vessels.....	109	82	72	32	60	3	140		
	411	246	204	119	101	120	200		
1829.									
Ships-of-the-line.....	131	33	6	12		32		2	
Frigates.....	149	41	12	80		25		6	
Smaller vessels.....	336	144	94	63		24		15	
	615	222	102	105		81		23	
1840									
Ships-of-the-line.....	120	49	3	11	11	50	15		11
Frigates.....	141	62	4	21	8	25	15		30
Smaller vessels.....	317	242	9	32	14	40	18		16
	578	353	16	54	33	115	48		57

Having now some data upon which to judge of the number of ships we must have as a substitute for permanent fortifications for the defence of our coast, let us now examine the losses that must be sustained by a reliance upon floating defences, as conqueror and conquered.

Loss of the English fleet during the war from 1793 to 1801. Captured, destroyed, wrecked, foundered, and burnt:

Ships-of-the-line.....	20
Under the line.....	145
Total.....	165

Loss of the French, Dutch, Spanish and Danish ships during the same war. Captured, destroyed, wrecked, foundered, and burnt:

Ships-of-the-line.....	84
Under the line, of which 150 were frigates.....	234
Total.....	318

Loss of the English fleet during the war from May, 1803, to July, 1815.
Captured, destroyed, wrecked, foundered, and burnt:

Ships-of-the-line	13
Under the line	304

Total..... 317

Loss of the enemy's fleet during the same wars, namely, French, Dutch, Spanish, Danish, Russian, Turkish, and American. Same causes as above:

Ships-of-the-line	71
Under the line	108

Total..... 179

In our statements of the cost of maintaining fleets, the total expenditure has been given, including wages of seamen, ordnance, &c. To make some comparison between the cost of building fortifications and building ships, the following facts may be useful:

The wear and tear of ships of the English fleet, 1799 to 1819, inclusive, was	\$322,849,296
The cost of building and repairing ships during the same period, was	70,789,070

Total cost of wear and tear and building in 21 years.....	393,638,366
Or, an average per annum of.....	18,744,784

The cost of building the ships afloat, comprising the navy of the United States in 1842, was	\$9,052,725
The cost of repairs upon the same vessels from time to time, was	5,579,229

Total..... 14,631,984

Here we have the repairs to first cost in the ratio of five and a half to nine. This cost was for fifty vessels, or for five ships-of-the-line, eleven frigates, including two steamers, and thirty-four smaller vessels, mounting in all 1,440 guns. The average cost per gun, repairs included, is \$10,161. The average cost per gun, omitting repairs, is \$6,286.

But cost of an exclusive reliance upon floating defences is far greater than appears by this statement. To it should be added the cost and repairs put upon the Constellation, Java, Guerriere, two steamers Fulton, and all the other vessels lost, broken up, foundered, &c., of which I can find no account, and which of themselves (the cost) would go far towards building lasting and permanent defences for some of the harbors on our coast.

I would wish to present the cost of the several fortifications on our coast and the repairs from time to time, but have no data therefor. The only fortifications with which I can make the comparison is Fort Schuyler, the cost of which to this date is..... \$843,187

To this add for completion, (it is now ready to receive its entire armament, and is, as defensible as can be made; the work remaining to be done consists in conveniences for the garrison,) say..... 50,000

Making the sum of..... 893,187

This work is to be armed with one hundred and eighty-four guns, producing an average of \$4,855 per gun. This single fort, calculated to endure for ages, is considered an equivalent in defence to an enemy's fleet, and a substitute for a fleet of floating batteries, otherwise necessary.

If we look to permanent land batteries for the defence of our harbors, we have at all times a suitable disciplined force in the *uniform* militia of our cities and towns for their garrisons, ready at short notice to man the guns. On the contrary, for floating defences we must look to the more limited number of sailors, unaccustomed to guns, and to be disciplined for the purpose.

There is no room for doubt, in my mind, that we cannot, with due regard to the safety of our cities, towns, and dock yards, rely upon vessels-of-war and steam batteries, and that economy demands a dependence to be placed in heavy land batteries built in the most permanent manner. The reliance upon ordinary merchant ships and steamers, as well as any other temporary expedient, I consider as no dependence whatever. Let us imagine a small fleet only of such STEAMSHIPS OF THE LINE as that elsewhere described, mounting thirty-two pounders and eight and ten-inch columbiads, and what chance is there against such broadsides for anything that can be made of merchant ships and mercantile steamers? Such vessels are in no manner suited for heavy armaments, and would, in a measure, have to be rebuilt to fit them for defence. Against a single ship-of-the-line, becalmed or anchored in smooth water, we might hope to interpose a formidable resistance with temporary batteries on merchant ships' decks, towed by mercantile steamers; but against several, mutually acting either on the offensive or defensive, and with auxiliary steam power, (or even without,) capable of flanking each other's position, no defence whatever could be placed in them.

There is no part of our coast where beneficial results might be better calculated upon from temporary expedients of this character than Louisiana. *The ports being built to keep off the enemy's heavy batteries, he must take to his boats.* These, when transporting troops, could readily be run down and destroyed by merchant steamers. A hostile army that might have gained the dry land of the Mississippi would be exceedingly annoyed by floating batteries on the decks of ships towed by steamers; but as a defensive, no reliance could be placed upon them. The facility with which field-guns and howitzers could set fire to and destroy such floating expedients is exemplified by the destruction of vessels used by us in the defence of Louisiana in 1814-'15. Where such expedients are unexpected, and no suitable force at hand to contend with them, they are of great value; but let our enemy know that such is our only defence, and he readily commands the means of destroying them.

4th. How far the increase of population on the northern frontier, and of the mercantile and marine on the northern lakes, obviates or diminishes the necessity of continuing the system of fortifications on these lakes?

Upon this point I am not so well prepared to present my views fully, having seen but little of the country and possessing few statistical facts upon which to rely.

On the lakes, as on the ocean, we have no need of fortresses to arrest the movements of invading armies. It is against the operations of floating batteries, as in the former case, that we build forts in this section of our country. Had our neighbors no vessels or means of procuring them we would have no need of forts; but we know they possess both a naval and a mercantile marine of steam and sailing vessels, and have fortified positions superior in strength to our own, within which to protect their mercantile marine, and, when occasion offers, to equip them either as transports or armed vessels.

In the event of a war, a desperate effort would be made to seize upon everything afloat in our ports. The same effort we would doubtless make to secure the floating power of our neighbors. We know, however, that Kingston has for years past been fortified, and strong works, I believe, are still in progress

for the land and water defences of that harbor. So long as they hold it, we cannot gain the important point of capturing the only means in their possession to annoy us. An invasion into the heart of our country is not likely to be thought of; and if undertaken, must result in the destruction of the invading force by the vast increase and present density of our population.

It would not be possible for an invading army to leave the lake shores beyond a few days' march. With the command of the lakes, our shores and all the towns and important lines of canals and railroads would be at the mercy of an enemy to lay under contribution, or burn and destroy, as might be their policy. Without heavy batteries to combat their fleet, we can offer no successful opposition by our superiority of numbers to such predatory naval expeditions.

With a naval superiority we could blockade their ports and have the means of pursuing any vessels that might escape the blockade. To protect ourselves in this way our force must be decidedly superior; and our resources would enable us to do so if we can in the commencement of a war save even our mercantile marine and capture that of our enemy. Without fortified harbors I cannot see how we can gain such results and advantages with an enemy possessing safe harbors, offering effectual security to his vessels.

Nor could we at once calculate upon reducing Kingston. The fortifications at that place cannot be taken by assault or destroyed by bombardment. It is only by the operations of a systematic siege that they can be arrested from the hands of an enemy. Some time must elapse after the breaking out of the war before we could hope to take so important a place.

The command of the wider parts of the St. Lawrence is in the hands of the power possessing the naval superiority. We could not cross that river, where its banks are beyond gunshot from our shores without such naval ascendancy, thereby prolonging the time necessary for reducing Kingston.

The commercial ports, in which self-interest now draws our numerous merchant steamers and ships, should therefore be provided with such heavy land batteries as will effectually secure the shipping in the commencement of hostilities and during any temporary check to our operations on land and water.

The same protection should be given to inlets, by which vessels could cut the lines of our railroads and canal communications.

Such batteries or fortifications are our only certain security. No increase of population or of mercantile marine can give us that protection (with the means our neighbors have at command) in the commencement of hostilities; nor can we gain the ascendancy on the lakes without some fortified harbor, under cover of which to build and equip a fleet. The subjugation of the Canadas, if the result of a war, will not be accomplished before Quebec and Kingston are reduced.

These two places, if defended in proportion to their artificial strength, will call for harder fighting and more prolonged than any battle we have yet fought. They certainly can be taken, and we believe we know enough of their construction to fit out the necessary armaments, but it will require time, and large military resources, during which the lake coast should not be left unguarded and unprotected.

The reduction of these two fortresses cuts off in the one case all further relief from the northern country, and all means of further annoyances by water in the other; but the entire subjugation and annexation of the country to ours depends more upon the people. Unless they see fit to govern themselves, as a part of our confederacy, we cannot make them. We may hold it by military power, but with the people opposed, the struggle will not cease with the fall of Quebec and Kingston.

All of which is respectfully submitted.

RICHARD DELAFIELD,

Major of Engineers.

Letter from Charles Stewart, United States navy.

BORDENTOWN, NEW JERSEY,
November 11, 1851.

SIR: I received from the Hon. Secretary of the Navy a copy of your letter to him, dated June 22, together with a copy of the resolutions of the House of Representatives at their last session, in relation to the fortifications adopted in the year 1816 by the United States government, and after the war with Great Britain, requesting answers to the questions propounded in the letter from some of the naval officers. Having no knowledge of the plan proposed at the period referred to, I am only enabled to predicate my opinion on the presumption that what was then adopted, and that under the experience of the war which had then terminated, was the best that could be devised to afford protection to those places and interests they were designed to secure.

The first question demands to know, "To what extent, if any, ought the present system of fortifications for the protection of our seaboard to be modified, in consequence of the application of steam to vessels-of-war," &c., &c.

In answer to this question, I beg leave to say that no good reason presents itself to my mind for the abandoning of any of the works now in progress of construction, or for the reduction of the number contemplated to be erected, in consequence of the application of steam to the purposes of maritime warfare, or in consequence of the improvement in projectiles. But, on the contrary, I should presume, that as the application of steam is now assuming a determined and fixed means in the prosecution of national hostilities, that instead of an abandonment of any portion of the defences that have been adopted, a more extensive means of resistance and protection at all such points as present objects worthy of being attacked on our maritime frontier would be called for and induced, that the honor of the government may be sustained and the deep interest of the people secured. It may be true, yet I do not think it probable, that some of the places contemplated to be fortified in the plan of 1816 may have so deteriorated in interest as to admit of modifications or changes in the plan of fortifying; of this, however, I have no means of forming an opinion; but if we take into consideration the great advantage and facilities which steam power will accord to naval armaments for approach, attacking, or for passing insufficient fortifications, it cannot but appear to the government that this constitutes a new and highly dangerous power to be guarded against in all future time; more especially on a maritime frontier of very great extent, and deeply indented with water communication, affording to an enemy who possess steam power the greatest facilities of annoyance in all directions of our country.

Your second question asks, "What reliance could be placed on vessels of war or of commerce, floating batteries, gunboats, &c., &c., as substitutes for permanent fortifications?"

In answer to this question, I must say that I am of opinion that but little reliance ought to be placed for the security of high national interest on defences of such doubtful character. They are too subject to untoward casualties to constitute at all times a reliable means of resistance; and besides, they would require permanent fortifications to afford them continuance and protection. As auxiliaries to permanent works in resisting attacks, they might be made available sometimes with good effect, but no further ought they to be relied on.

To the third question which you ask, "Is it necessary or expedient to continue the system of fortifications on the shores of the northern lakes?"

I again beg to express my entire ignorance of what that system proposes should be done. But considering that those lake shores constitute an important frontier boundary between our interior country and a powerful military and naval nation, I should think that it would be politic to secure by fortifications

as far as reasonably practicable, all the important positions essential to commercial purposes and naval preparations for the lakes. In this direction there is but one power with whom we may be brought into collision, and that is Great Britain. She is, however, a power who, on a probability of hostilities with the United States, would readily throw on to our border and on the lakes a powerful re-enforcement of military and naval annoyance to our lake frontier.

Very respectfully, I have the honor to remain your obedient servant,

CHARLES STEWART.

Hon. C. M. CONRAD,

Secretary of War, Washington, D. C.

PAYMASTERS IN THE ARMY.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

A resolution of the House of 12th December, 1861, relative to paymasters in the army.

APRIL 1, 1862.—Referred to the select committee on government contracts, and ordered to be printed.

WAR DEPARTMENT,
Washington City, March 28, 1862.

SIR: I have the honor to transmit herewith a report of the paymaster general, in answer to a resolution of the House of Representatives passed December 12, 1861.

Your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

PAYMASTER GENERAL'S OFFICE,
Washington City, March 27, 1862.

SIR: In compliance with your request, I have the honor to report that a copy of a resolution of the House of Representatives passed December 12, 1861, respecting the number of officers connected with the pay department of the United States army, the disbursements made by each, and the compensation allowed them, &c., was received at this office December 14, 1861. This resolution has not been answered from the inability of the department, with its present clerical force, to make out the report requested, embracing, as it would, the necessity of examining the accounts of all the paymasters and additional paymasters now in service since the commencement of the present war, and comparing the same with the accounts as kept in the office of the Second Auditor of the Treasury. Various portions of the matters embraced in this resolution have been answered under replies to other resolutions of the House or Senate, such as giving a list of the paymasters and additional paymasters in the service,

and whether any of them can be dispensed with. The same reason that has prevented the previous answering of this resolution still applies. The clerical force of this office is inadequate to meet even its current business, and the accounts of the paymasters are constantly accumulating in number, and remain unexamined for want of clerks. To take up and go through all these accounts, and make an abstract of same, is at present impossible with the force of this office. A copy of the resolution is herewith enclosed, to show the extent of labor that would be required to answer the same.

Very respectfully, your obedient servant,

BENJ. F. LARNED,

Paymaster General United States Army.

Hon. EDWIN M. STANTON,
Secretary of War.

WAR CLAIMS AT ST. LOUIS.

LETTER
FROM
THE SECRETARY OF WAR,
TRANSMITTING

The final report made by the commission on war claims at St. Louis.

APRIL 2, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., April 1, 1862.

SIR: I have the honor herewith to transmit, in compliance with a resolution of the House of Representatives of this date, "a copy of the final report made by the commission on war claims at St. Louis, which commission consisted of Hon. David Davis, Hon. Joseph Holt, and Hon. Hugh Campbell, which report gives a summary of the labors of the commission, and the reasons for their action in the different classes of claims brought before them."

Very respectfully, your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. G. A. GROW,
Speaker House of Representatives.

ST. LOUIS, *March 10, 1862.*

Hon. EDWIN M. STANTON, *Secretary of War.*

The undersigned, commissioners appointed to examine and decide upon claims against the military department of the west, originating prior to the 14th of October, 1861, have the honor to submit the following report:

On the 6th of November, 1861, they convened in the city of St. Louis, and, through the courtesy of the Hon. S. Treat, District judge of the United States, rooms suitable for the transaction of the business of the commission were assigned them in the custom-house and post office building, which they have continued to occupy to the present time.

The following persons have been associated with the commission, as organized, and have performed the duties indicated in connexion with their names, respectively. A part of them have been retained permanently in the service, while the others have been only temporarily so, as the progress and character of our investigations required.

Samuel T. Glover, counsellor.
 John R. Shepley, associate counsellor.
 J. K. Knight, attorney to collect evidence at Cairo, Illinois, &c.
 J. S. Fullerton, secretary.
 William H. McHenry, commissioner to qualify witnesses, &c.
 R. R. Hitt, photographic reporter.
 R. C. Totten, clerk to receive claims, &c.
 P. A. Hall, expert in railroad matters.
 John B. Turner, expert in railroad matters.
 Edward W. Wallace, clerk of railroad accounts.
 C. Woodward, expert in steamboat matters.
 Benson S. Hopkins, expert in mercantile accounts.
 P. B. Haagena, clerk in mercantile accounts.
 James H. Bowen, compiler of receipt register.
 Andrew W. Mead, clerk.
 William B. Alvord, certificate and copying clerk.
 C. A. Gannett, certificate and copying clerk.
 Lawrence D. Alexander, certificate and copying clerk.
 J. J. Wilcox, certificate and copying clerk.
 O. T. Fishback, certificate and copying clerk.
 John P. Camp, messenger.
 Charles Kick, janitor.

Immediately after the appointment of a secretary, messenger, doorkeeper, &c., it was ordered that public notice should be given in the English and German newspapers of the city, of the organization of the commission, and that claims against this department should be at once filed. This notice was also inserted from time to time in newspapers published at Chicago, Cincinnati, Cairo, Jefferson City, and Keokuk. Subsequently the Secretary of War directed that unless the claims against this department were filed on or before the 10th January, 1862, they would not be paid, and to this order the utmost publicity was given. The claims presented in compliance with these requisitions amount to more than \$8,000,000.

The preparation of the cases for adjudication imposed a very arduous and responsible labor upon the United States attorneys in attendance upon the commission; and with a view to facilitate the discharge of their duties as well as their own, it was deemed desirable, in consequence of the diversified character of the claims, to classify them, and to take up these classes for examination in regular succession. A docket was kept, and notice was given through the public papers on the days on which particular classes of claims would be heard, in order that the parties, their witnesses and attorneys, might be present. The utmost latitude of inquiry has been indulged, and no technical rule of evidence has been permitted to exclude any fact which it was supposed could possibly shed light upon the questions pending before the commission. The claimants themselves, when present, or within convenient reach of summons, have been generally examined under oath. This has been invariably done when they have desired it. Their own statements, when sifted by a rigid cross-examination, have often furnished grounds entirely satisfactory and reliable for the disposition of the claims.

When the claimants themselves failed or declined to introduce evidence in relation to the transactions on which their claims were founded, this was done by the United States attorney, so that the decision rendered was, in all cases except the smaller and unsuspected vouchers, based on testimony carefully examined and weighed.

The labors of the commission have occupied a much longer period of time than was anticipated, but this time could scarcely have been abridged, since

with rarely an exception, from nine to ten hours of each day have been given to their duties. They have been anxious to avoid all appearance of haste or impatience, and have, in consequence, continued the cases upon the docket from day to day, and from week to week, so long as the parties or their attorneys suggested that they had additional testimony to offer.

The claims "for money borrowed or seized from banks" were first examined, both because of their magnitude and because of the extraordinary circumstances under which they originated. Those accruing before and up to the 14th of October, 1861, amount to about \$977,832 98, of which \$732,102 98 were seizures and loans by order of General Frémont. Of the remainder, \$10,000 was a loan negotiated by General Lyon at the Springfield branch of the Bank of Missouri on the 19th of July, and the balance—the property of the same bank—was taken into his possession on the 7th of August, 1861. It is due to the memory of this patriot and brave soldier, who, three days afterwards, freely offered up his life for his country upon the battle-field, to state that this \$235,730 was taken in charge by him at the special request of the directors of the institution, for the purpose of saving it from falling into the hands of the rebels, then in large force pressing upon Springfield. These funds passed into the hands of Horace A. Conant, acting quartermaster, to whom they are properly chargeable.

Naturally enough, in a city under martial law, these advances have assumed the courteous designation of "loans," though the testimony makes it manifest that, with the exceptions hereafter referred to, they were anything but voluntary. The banks were generally given to understand, by unmistakable indications, that what the military authorities could not borrow, they would take. In this manner the first loan of \$250,000 was obtained on obligations signed by Quartermaster McKinstry, and approved by Major General J. C. Frémont. On the day preceding this transaction Quartermaster McKinstry called upon the principal banking institutions of St. Louis, and exhibited a requisition for the loan, and at the same time, by way of strengthening his application, stated that martial law would soon be declared. The presidents of the respective corporations having assembled, in view of the losses which they had suffered from the acceptances of Secretary Floyd, hesitated to lend money on the obligations of officers of lower rank. Their scruples, however, gave way under the assurance of one of their number, known to be in the confidence of "headquarters," "that if the amount demanded was refused, it would be seized." The loan thus effected was in "bankable funds,"—being the notes of Missouri banks which have suspended specie payments by authority of law—and was subsequently repaid. No claim, therefore, in connexion with it has been before us, and the transaction has only been looked into as the precursor of those which soon followed upon a much larger scale.

Each of the "loans" hereafter spoken of, as well those by banks as individuals, has been followed, in part to the books of McKinstry, where they have been found loosely entered, though not formally to the credit of the United States, and in part to the vouchers filed with the obligations of General Frémont, where the money appears to have been obtained for their payment.

While considering the claims for seized or borrowed money, it became necessary to distinguish between those made in specie or its equivalent, and those made in "bankable funds." In the former, the banks were coerced into a surrender of that portion of their assets which they desired to retain as the basis of their circulation. When it became known to the public that on their arrival here, instead of being safely kept, these funds had been seized and appropriated as hereafter stated, it exerted a most disastrous influence upon the credit of the Union Bank. It was, in consequence, forced into insolvency; its notes ceased to circulate, except at ruinous rates, and its stock depreciated one-half below its previous value. In this class of cases, obligations were given in the name of the

United States to repay with interest, in one instance, at the rate of eight per cent. per annum. It was, therefore, deemed equitable, in each of this latter class of claims, to allow interest at the rate of six per cent. Where the funds seized were "bankable," it was held that the difference between their value and United States funds was a sufficient equivalent for interest. Having reason to believe that with slight exceptions the seizures or loans, not numerous, made in the interior of the State, were at the suggestion and for the security of stockholders, as a means of protection from the ravages of war, no interest has been allowed, even in cases where the larger proportion of the funds was in specie.

In the efforts made to trace each one of these seizures to its final destination, it was discovered that in more than one instance they were entirely diverted from their original purpose. The funds of the branch of the "Bank of Missouri," at Canton, and those of the branch of the "Union Bank," at La Grange, amounting to \$68,250 60, were, for their security, taken by order of General Pope, and by him sent to St. Louis, with a view of handing them over to the respective parent banks in this city. On their arrival here they were seized by direction of General Frémont, and placed in the hands of Assistant Quartermaster Captain E. M. Davis, who should be held responsible for the same by the government. Quartermaster Davis was examined as to the disposition of these funds, and he deposed that \$48,102 75 of the amount had been paid by him to his son-in-law, Mr. Hallowell, for clothing, eastward, and that a further sum of \$6,500 had been disposed of to a Mr. Brown, on account of clothing "to come." This illegal payment for clothing in advance was the more culpable, because at that time there were large sums due from the United States for supplies, &c., already furnished to this department.

In addition to these bank, there were also individual loans to the government effected during General Frémont's administration amounting to \$59,000. These claims have been presented and allowed. Such transactions are wholly irregular, and, without some extreme emergency to justify them, (which has not been alleged,) must receive the condemnation of the government. If a commanding general, without even advising with his government on the subject, is permitted, at will, to replenish his military chest from the banks and private fortunes of the nation, there is an end of all economy and of all just responsibility in the military service. The correction, however, for these abuses, now disclosing themselves for the first time in our history, is to be found in the prompt action of the department against those who commit them, and not against those who have been their victims.

It does not appear that any of the banks or individual loans or seizures were made with the assent or knowledge of the government. We are assured that none of them have been reported to the proper department at Washington. The inference is very clear that, although within speaking distance through the telegraphic wires, the War Department was not consulted at all upon the subject. Although a question arises as to why this extraordinary means of providing funds was resorted to at a time when the treasury was understood to be meeting its liabilities, and although this question naturally excites vigilance of inquiry as to the purpose for which the funds were obtained, and the objects to which they were in fact applied, still we do not feel called upon to pursue the investigation, since, in our judgment, the result could not affect the liability of the United States. The government thought proper to place General Frémont in command in this department, and to arm him with a power which made resistance to his mandates on the part of the citizen absolutely impossible. He took what he chose, and disposed of private property on which he laid his hands as to him seemed good. His action was in the name, and claimed to be by the authority and in the interests of the United States; and as the citizen could not arraign or resist his course, if abuses occurred, either in the "loans" or in the application of their proceeds, the consequences, according to the maxim

that "they who trust most shall lose most," should be borne by the government from which he had received his commission.

Our investigations from day to day have afforded strong and ever-multiplying proofs that the administration of the late Quartermaster McKinstry was marked by personal favoritism, by a complete indifference to the public interests, and by an unceasing anxiety to fill at the expense of the nation the pockets of a clique of men who surrounded him, and, enjoying the uninterrupted *entrée* to his office, ever stood between the government and the honest merchants and mechanics who sought to have dealings with it. He seems to have had an iron will, which instinctively repelled all incongruous elements calculated to jar upon the harmony of his official life. A striking illustration of this was found in the fortunes of Assistant Quartermaster Dodds, who gave his testimony before us. He was first assigned duties in connexion with steamboat transportation, and, on entering upon their discharge, he felt called upon at once to make a report to "headquarters," asking the attention of the government to the abuses in that branch of the service. This appears to have excited the displeasure of J. C. Woods, aide-de-camp and military secretary of the commanding general, who predicted that the assistant quartermaster would not long remain in his position. He was accordingly transferred to the clothing department, under the immediate eye and supervision of McKinstry, where the same sense of duty impelled him to report, exposing the knavery apparent in this new field of labor. On the rendition of this second report, he was relieved and placed in charge of the horse and mule department. The same unconquerable determination to expose frauds upon the government, whose commission he held, led him once more to report from a branch of the service affording probably more abundant materials than had yet fallen into his hands, and the same fate befell him. He was then assigned for duty at Benton barracks, where his impatient and intermeddling integrity was probably not able to disturb the smooth flow of the quartermaster's speculations in this city. All these removals took place within a period of two or three days. When asked what had become of his reports, he said he did not know, but had learned from a source he credited that the official to whom they were addressed had put them in the stove.

The examination of claims for tents, &c., strikingly illustrated the statement we have made in relation to Quartermaster McKinstry's administration. Tent-making has for many years been an important branch of the manufacturing industry of this city. Nearly all those engaged in it appeared before us, and testified that soon after the commencement of our national troubles each of them applied to McKinstry for contracts. In some cases the offers were seemingly approved; in others, no definite answer was given; but in all cases the applicants were referred to Joseph H. Pease, No. 18 Main street, who, it was alleged by the quartermaster, had charge of such matters. This Mr. Pease was a prominent member of the clique referred to, and, when called on by the tent-makers, he told most of them he was a commission merchant, and, as he received no compensation from the government, he would require from each of them a commission on the tents passing through his hands, when delivered. The percentage was fixed, in most cases, at five, and in one or two at a lower rate; and in one instance no charge was made, owing, most probably, to Pease having effected a good bargain with the parties, (Clemens & Johnston,) by purchasing their tents on hand at \$22, and then selling them to the United States at \$30. It was shown by the testimony of tent-makers that about \$200,000 in value had been thus delivered through J. S. Pease to the United States, on which his commission did not probably fall much short of \$10,000. It cannot be necessary to say that this commission, though seemingly paid by the tent-makers, was, in fact, paid by the government, and that for want of the healthy competition contemplated by law, and necessarily excluded by this course of dealing, the loss to the government far exceeded the amount named.

But this exposure does not exhibit by any means the worst phase of Mr. Pease's double and lucrative relations to the quartermaster and tent-makers of this city. He admitted, under oath, before the commission, that while acting in his anomalous capacity he purchased wall tents, hospital tents, &c., at low prices, and turned them in or sold them to the United States at high prices. In one case he acknowledged that a profit had in this way been realized of over thirty-six per cent. The lowest rate that could be traced was about eight per cent. These charges were confined to the more expensive class of tents. The ordinary "army tent," which cost from \$10 to \$11, seems to have been delivered to the government at its actual cost—that cost having, of course, been increased to the amount of the commission exacted by this "middle man."

For some time after Mr. Pease began to act in the character thus assigned him by the partiality of the quartermaster the vouchers were issued in the name of the tent-makers, which, giving him, as it did, a colorable agency for the government, served in some slight degree to conceal the real nature of the transactions in which he was engaged. Afterwards, however, this veil—sufficiently flimsy from the beginning—was thrown off, and he delivered the tents to the United States in his own name, and paid the tent-makers for them in other vouchers—sometimes for hay, drums, bugles, &c.—which, in his multifarious dealings, he chanced to have on hand.

The vouchers for the classes of tents mentioned as having been bought by Pease at low and immediately sold to the government at high rates were presented by his assignees, and, in deciding upon them, two questions arose: First, whether any deduction should be made because of the circumstances under which the claims originated; and, second, whether any deduction should be enforced against *bona fide* assignees for value. Both of these points have been well considered, and have been determined upon grounds which, though again and again reviewed, we find no reason for questioning.

All the provisions of law upon the subject show that the government seeks to obtain its army supplies at the lowest rates. All possible precautions against collusion and unfair dealing have been taken by the regulations controlling government contracts. Competition is invited, through public advertisements, that are never dispensed with, except under the pressure of emergencies which it is not pretended existed in the cases now under consideration. The policy that seeks to afford to those who have supplies to furnish an opportunity of dealing face to face with the government is unmistakably indicated in the acts of Congress and in the usages of administration under them. The abandonment of the system of advertising, and the creation of a class of persons known in ordinary parlance as "middle men," to whom all sales for the government, and from whom all purchases for it, should be made, if not an original device with Quartermaster McKinstry, was certainly pushed by him to an extent which has no parallel in the history of official delinquencies as connected with the military service of the country. This system, alike fatal to the pecuniary interests of the government and the morality of the service, was not confined to tents, but extended to every portion of the field of army supplies which was sufficiently fruitful to attract the avarice of this class of men. Honest mechanics who had tents for sale, merchants who had supplies which the government needed, and men from the country offering horses and mules, were turned from the quartermaster's office without a conference, and driven down into the meshes of the "middle men," to become, in common with the government, a prey to their rapacity. Whether this system was the fruit of official indolence or corruption, it was alike in violation of law and duty, and we have not hesitated to give it an unqualified condemnation. As the readiest means of cutting it up by the roots, we have held that "middle men" shall receive no profit on the supplies passing through their hands, and that the government shall pay for such supplies only their fair market value, which is the price at which they could and

would have been purchased had the quartermaster discharged his duty, and his favorite "middle men" not appeared in the transactions. An advertisement for a single day in the papers of St. Louis would have secured a fair competition for the manufacture of the tents required for the army; and in the absence of such advertisement, had the quartermaster dealt directly with the manufacturers—which he could have done as readily and conveniently as with Pease—the commission exacted of the tent-makers and the increment of price sought to be imposed upon the government would have been alike avoided. It is for the government itself to punish official malfeasance; but we feel that we fully represent its spirit, as well as the principles of law and sound morals, in wrestling, as far as practicable, from the parties the spoils of this illegal and oppressive traffic.

Little difficulty has been encountered in responding to the second question. Government vouchers are only stated accounts, officially certified. While, from considerations of convenience, their assignment is recognized, they do not possess the characteristics or enjoy, in their circulation, the protection which is secured to negotiable mercantile paper. The assignee takes them "*cum oncre*," subject to all the rights which could have been successfully asserted against the assignor. The principle of policy which seeks the exposure of all official frauds, and forbids that profits shall be made by violation of public law, is too valuable to be sacrificed to individual interests. Under a different ruling, the holder of a voucher, originating in an illegal or fraudulent transaction, would have but to transfer it to clothe it with an unimpeachable validity. While, however, so far as the rights of the government are concerned, we have treated the assignee as standing precisely in the stead of the assignor, we have respected his position to the extent of saving him, when practicable, from loss. When, therefore, the assignor has presented a voucher in his own name, which has been allowed in whole or in part, we have recouped or reclaimed from this allowance the amount of the deduction to which his voucher, in the hands of a *bona fide* assignee, was justly subject. This proceeding accomplishes justice for all parties concerned. It assumes that the claim of the government, growing out of the illegal or fraudulent contract, is one for indemnity, which may be asserted either directly against the voucher arising out of the transaction, or against any other voucher held and urged by the assignor. It assumes, also, that, upon deduction being made, the assignee would be entitled to his recourse on the assignor. We regard this as very clear, and have not met with a case in which such right to reimbursement has been denied. Having all the parties and their vouchers before us, we have felt it to be our duty so to dispose of the issues raised as to protect the innocent from loss, when we could do so without, in any degree, compromising the public interests, or holding parties to illegal transactions to more than a just responsibility.

There were cases in which the "middle man" had disposed of his contract, in whole or in part, for a consideration, and in one such instance the assignee, who felt that the trafficker in horse and mule orders, with whom he had dealt, would not be able to reimburse him, or might not be liable, insisted that the equities of the government, as against his assignor, should not be enforced against himself. There was no hesitation on our part in holding that the assignee stood in the place of the assignor, and that in claiming his rights he necessarily subjected himself to his liabilities, and that the government could not be prejudiced by a transfer to which it had not assented, and to which it was no party. Properly regarded, the assignee of one of these floating orders has less claim to be favorably considered than his assignor, since every transfer made does but increase the number of those who are struggling to make a profit out of the contract, and of course strengthens the temptation to oppress those of whom purchases are made, and to defraud the government, by imposing upon it inferior animals. If the *bona fide* assignee of a regularly issued voucher

cannot, as we have determined, be protected from the consequences of any lurking fraud that may infect it, how can such protection be claimed by a mere speculator in horse and mule orders, which are, in fact, but licenses to plunder the public treasury?

It was found to be impossible to designate the particular lot of tents on which Pease had charged the highest or the lowest profit, (thirty-six to eight,) but it was considered fair towards the assignees to deduct only ten per cent. on all items of the higher class of tents, on which it was admitted he had charged a profit to the United States. The total amount of these deductions is a little over \$3,900. It is believed that this is but a small part of the sums unjustly obtained from the government and manufacturers in this single class of claims, as many of them have been paid, and the speculator, or "middle man," is now beyond the reach of the law.

The claims for horses and mules amounted to more than two millions of dollars. The first purchases made here by Quartermaster McKinstry were a few hundred horses under contract on bids invited by advertisement. All other purchases were effected in a manner not recognized by law, and were subjected to the severest scrutiny.

It appears that Quartermaster McKinstry, when opening the bids for the first and only contract, announced that Asa S. Jones (United States attorney for this district) and John H. Bowen had, respectively, bid \$119 and \$119 50 for cavalry horses. He recommended these bidders to become partners, and they adopted his suggestion. In the course of a few days Bowen sold his half of the contract to a third party for \$5,000, which sum was afterwards retained by McKinstry out of the first payment to the contractors and paid over to Bowen. This fact is noted to show that the quartermaster was fully cognizant of the high profit, beyond market rates, paid by the government on cavalry horses. Notwithstanding this glaring development, the quartermaster did not afterwards invite competition in any manner. On the contrary, he adopted \$119 as the government price for a cavalry horse, and issued verbal or written orders to his favorites (most of whom knew very little about horses) to purchase at that rate. With regard to the prices of mules and artillery horses, it seems they were not established by bids or competition of any kind. The vouchers show that in most cases the artillery horses were charged at \$150 and the mules at \$119. These written orders for animals became a marketable commodity, and it was proved that one for five hundred cavalry horses was sold for a premium of \$5,000. Those who received the largest orders to purchase were residents of and recently arrived from California. Among these was Leonidas Haskell, who had a written order from General Frémont for four thousand mules, at \$119. He made his purchases—from those who would have sold to the government at the same price—at \$108; but before the order had been entirely filled he was appointed by General Frémont on his staff, and the part of the order unexecuted he turned over to H. C. Worth, his clerk, who, like himself, was a Californian. and he—in what capacity is not known—proceeded to realize what remained of this gigantic job, which promised in the aggregate a profit to these favorite Californians of \$44,000, and a loss to the government of the same amount.

Of course, the farmers and small dealers in the country, who had horses and mules for sale, on their arrival in the city were turned away from the quartermaster's office, and referred to these "middle men" who held the orders or contracts. The latter, by securing fraudulent delays in the inspection of animals, and by other devices, obliged their holders, in order to avoid the heavy expense to which they were subjected, to part with them at the lowest possible rates, and they were at once sold to the government at \$119, or generally \$150, if artillery horses. Many of these horses bought as "cavalry" were, through the connivance of the inspectors, branded as "artillery," and charged by the "middle men" to the government as such. Under such a system, with unfaithful

officers ordering and unfaithful officers inspecting and receiving them, it was not to have been expected that the horses and mules would be of a superior quality. The proof is clear that they were generally inferior—many of them diseased and partially blind, and altogether worthless for the service. The unpatriotic and rapacious spirit in which these contracts originated followed them to their consummation.

Outside of the city another method of purchasing horses, equally illegal, was adopted. A certain Mr. Reeside, who resides at Washington city, obtained two special written orders from General Frémont, under date of the 10th August, one of which authorized him to buy two thousand horses, at prices not exceeding \$130, and the other appointed him inspector of the horses thus purchased, and allowed him a commission of two and a half per cent. for the inspection. This arrangement, which usurped altogether the functions of the quartermaster, worked pleasantly enough for Mr. Reeside, but rather hardly for the government. With so tempting a margin, he found it more agreeable to sub-let the order to purchase than to give its execution personal attention, and, under the persuasions of his two and a half per cent. commission, he found and reported that all the horses which he inspected and accepted, whatever they might have cost, were worth to the government at least \$130 each. Whatever indignation such a course of administration may excite, the result certainly cannot excite surprise.

This Mr. Reeside operated in Cincinnati, and issued his sub-orders for the purchase of horses to certain friends, few of whom had any knowledge of the business beyond what is common to bankers, publishers, and tavern-keepers. The horses were bought at their market value, and having been charged to the government at \$130, Mr. Reeside, we presume, was paid his commission of 2½ per cent. on that estimate.

It is refreshing to find one or two agreeable exceptions in these horse purchases. Quartermaster Rankin, of the third Iowa cavalry, after much importunity and delay, obtained permission from General Frémont to buy horses for his regiment in the vicinity where it was recruited. It is said that this is one of the best mounted regiments in this department, yet the average cost of the horses, including all expenses of buying, does not exceed \$97. Colonel Glover, of the third Missouri cavalry, was also permitted to buy a few on equally good terms.

The claims for horses and mules thus bought by middle men and sold to the government have been disposed of on the principle already adverted to and explained. The parties were allowed the full value of the animals at the time and places of their delivery to the government, and no more. Their actual cost to the middle men, and expenses, were regarded as a safe indication of this value. This value was in some cases ascertained from the parties themselves under oath, and in others from other sources of information entirely reliable.

The most troublesome and complicated class of claims were those connected with steamboats; and although many days were devoted to their investigation, it was found impossible to unravel satisfactorily the tangled skein of fraud and bribery which were alleged to have been practiced in the purchase, charter, pay and subsistence of the boats employed. The prices charged the government seemed in all cases high, and in many extravagantly so. They were sustained with singular emphasis of testimony by those actively connected with the steamboat interests, and were assailed by much intelligent and reliable evidence from other quarters. No questions of fact which have been submitted to us have in their examination involved such a mass of earnest and contradictory opinions and proofs as these.

The quartermaster appears to have given little or no personal attention to this most important branch of the service, placed by law in the special charge of his department. The policy of opening new fields of enterprise for favorites and

"middle men," led to the appointment of J. C. Woods, "director," Barton Able, "superintendent," and John H. Bowen, "agent" of steamboat transportation. These appointments were wholly without legal sanction, but the parties entered upon the respective positions assigned them, and discharged their duties for months without receiving, as they insist, then or now, any compensation whatever. This presents an exhibition of patriotic zeal unusual and remarkable. Thomas B. Johnson, captain of the "New Sam Gaty," when applied to by Bowen, offered to make a trip with his boat for the government to St. Charles for \$400; Bowen insisted that it was too little, and that he should charge \$500. The captain deferred to the suggestion, and having on the trip expended \$4 for wood, on his return he presented to Bowen, "agent," a bill against the United States for \$504, which he collected, and paid the captain \$404, and retained the remaining \$100 for himself. It is true that this is an isolated case, but it is exceedingly suggestive.

The purchase of steam-tugs and other steamers, for the purpose of converting them into gunboats, seems to have afforded remunerative employment for agents and favorites. The steam-tug "Wonder" was bought by Reed & Mann for \$1,500, and sold to the United States by them, through Leonidas Haskell, who represented himself to be an agent of the government, for \$4,000, for which sum a voucher, obtained by Haskell himself, was issued to them. As, before the sale, Mann had distinctly informed Haskell what the boat had cost, some surprise may be felt that an effort was not made to effect the purchase at a more reasonable rate, but that surprise will give way before the statement which follows: It was admitted by Mann, who was examined by us under oath, that he transferred this voucher to Haskell for \$3,000, in Missouri bank paper. It is known that for such paper government vouchers were at that time at par, and, in fact, at this rate, this voucher itself was afterwards sold to the State Savings Association of this city, having been previously disposed of by Haskell at the same rate for mules at \$108, which he immediately sold to the government at \$119. We could not probe the transaction further, nor can it be necessary to do so for its just appreciation. This is the same Haskell who has already appeared in this report with an order from his commanding general for 4,000 mules, at \$119 each, promising a profit from the government of at least \$44,000; and who is also presented to us by the testimony as a member of the commanding general's staff. He has evidently made the most of his agency as he did of his order.

The "Submarine, No. 7," was bought for \$26,857. It was testified before the commission that there belonged to it a vast amount of superstructure and machinery adapted and used for the raising of sunken boats, and which, though estimated in the sale at from \$10,000 to \$12,000, could not be used by the government, and was for its purposes entirely worthless. The vessel was afterwards so repaired and altered as to make it substantially new, very little, if any, of the old boat remaining. The purchase was made by General Fremont directly, without the intervention of the quartermaster, or any one else, except perhaps the person who was to reconstruct the steamer into a gunboat. The portion of the "Submarine" that was used in the reconstruction was stated to be worth some \$12,000 or \$15,000. The United States lost \$12,000 or \$15,000 by the operation, which would have been saved had it been invested in the part construction of a new gunboat instead of the valueless wrecking apparatus referred to.

Through this trio of "director," "superintendent," and "agent," the steamboat business of the government seems to have been conducted. Boats were purchased and chartered without advertisement or chance of competition. The owners of boats which had been "laid up" from the troubles of the country suddenly found their rates advanced by these unsalaried officers to those usual in prosperous times. This liberality was extended yet further, and "deck hands," before contentedly working at \$15 per month, had their wages in the United

States service raised, without solicitation, to \$30. Of the several classes of boats employed, that in which the crews and subsistence were supplied by the United States, appears to have presented unusual opportunities for speculation. The commanders were appointed by the "superintendent," who, in a large majority of cases, bargained to have half the profits of subsisting the crew, the allowance for which was fixed by himself.

It is quite probable that emergencies may have existed requiring deviation from the ordinary routine of the army regulations in procuring boats, and if such had appeared—which they did not—in the evidence given before the commission, due allowance would have been made. With the knowledge, however, which we have as to the stagnation of the steamboat interests, the abundance of suitable steamers out of employment, and the high prices paid, we cannot withstand the conviction that the operations of this branch of the service, under the supervision of the officers named, were marked by looseness and improvidence.

The plan of chartering steamers and of supplying them with crews and subsistence by the government, with a continuance of the entire expenditure whether the boat was in active service or not, could not but lead to abuses, and prove a most costly system of transportation. The rough handling, too, to which boats with officers and crews furnished by the government are almost invariably subjected, lays a foundation for claims for damages, which we have generally found sustained by strong proof. We have not deemed it within the scope of our powers to consider this class of claims, but many of them, very heavy in amount, have been brought before us, and in connexion with other issues the testimony in their support has been heard. Their number and amount satisfy us that this system of chartering boats should at once be abandoned. After carefully comparing and weighing the testimony offered, some of these claims were allowed in full, and upon others deductions were made. It is believed that a rigid analysis of the evidence will show that if, in our decisions upon these complicated and severely contested issues, we have not reached the point of exact justice, we have made the nearest possible approach to it. We have deemed it safest to occupy somewhat middle ground between the conflicting statements of the most reliable witnesses who deposed on behalf of the government on the one side and of the claimants on the other.

Railroad transportation next engaged the attention of the commission. As a preliminary measure, the assistance of Messrs. Turner and Hall, of Chicago, (two intelligent experts in railroad affairs,) was secured in the examination of all the claims of this class which had been filed. They made their reports of the results of their investigations, and gave their testimony in detail in presence of the claimants. It appeared in this connexion that the commanding general of the department had created a new office, that of "superintendent of railroad transportation," to which he had appointed a person named E. H. Castle. This officer appeared before the commission and exhibited his letter of appointment from General Frémont, which assigned him the pay of a COLONEL IN THE ARMY. He issued a tabular statement fixing the rates for the transportation of supplies and troops, which is often alluded to in the evidence as the "Castle circular." Had the rates thus established been considered as maximums, and competition been invited, it is believed that railroad service could have been obtained at a saving to the United States of between forty and fifty per cent. The testimony of nearly all the representatives of railroads concurred in stating that the rates of the "circular" for freight were materially higher than their ordinary charges. The only exceptions to this view of the subject were found in the officers of railroad companies west of the Mississippi. It appears that these roads occupy unfavorable locations, have been constructed with heavy grades, and at a very great expense, as compared with the prairie roads which run eastward. There is found at present an additional ground for their demanding increased rates in the fact that large portions of their tracks have been torn up and their culverts

and bridges destroyed by the progress of the war, which on the part of the rebels seems to delight in expending its fury upon all that is grand and useful in the internal improvements of our country.

It was also shown that the rates for passengers, (two cents each per mile,) when applied to large bodies of men, were so very profitable as to create great competition amongst the agents of railroads, and it is painful to add that commanders of regiments and others have received large sums for giving preference to certain roads in the transportation of troops. Under these influences regiments have been carried out of their way and transported by circuitous routes, thus involving the government in a heavy increase of expenditure, and exhibiting a shameless spectacle of official and personal demoralization. The very intelligent receiver of the Chicago, Alton, and St. Louis railroad (Mr. Robb) deposed before the commissioners that if the government would give to that road the business that naturally and properly belonged to it, as the most direct route between given points, he would carry troops at one cent each per mile, and could do so profitably. Since the change of administration in this department and the removal of Superintendent Castle—who naturally enough appears to be a favorite with railroad companies—contracts have been readily made with railroads east of the Mississippi for the transportation of troops at one and a third cent each per mile, and similar arrangements could readily have been made before.

Contracts for transporting troops, when made by a quartermaster or other officer having command of them, have been recognized by us under positive instructions from the War Department. In other cases east of the Mississippi we have treated the rates in the "circular" as maximums, and have allowed two cents per mile only when the body of troops moved together fell short of one hundred. For bodies of between one hundred and five hundred, one and a half cent per mile was allowed, and one and one-third cent per mile for large numbers. This is a very liberal compensation, and is more than would be demanded under competition for troops transported in regiments. We learn that eastern railroads, generally prosperous and strong, have been paid at the full rates of the "Castle circular," and that some of them, availing themselves of the misfortunes which have befallen other roads, have, through the monopoly of transportation thus temporarily secured, realized the most enormous profits from the government.

It is a subject of universal complaint with western railroads—which are generally in debt and struggling with embarrassments unknown in the east—that while those of the east have been paid their earnings, the claims of those of the west have been permitted to accumulate, and still generally remain unsatisfied. We entertain no doubt but that if the government would insist upon just terms in the east, as is now being done in the west, they would be at once acceded to.

Transportation by express was made without any contract, except in a single instance, for a small deduction. If competition had been solicited in this description of service the saving to the government would have been immense, for this expensive mode of conveyance has been resorted to in a manner and to an extent hitherto unknown. An officer—Major George E. Waring, who is a relative of General Frémont—belonging to the "Frémont Hussars," had his two horses and servant, with chest and box, sent by express from Washington to St. Louis, at a cost to the government of \$185, and General Frémont indorses the bill: "This bill is correct and ought to be paid." Heavy ordnance, tents, and other bulky supplies have come by express from eastern cities and other remote points, for most of which no pressing necessity appears to have existed. A lot of ambulances, 30 in number—which could as well have been made in this city—were ordered from New York at \$286 each, including the medicine chest, operating table, and a pair of litters accompanying them, the express charge on each of which was \$75. It was ascertained, upon investigation, that a large part of these cumbrous

and costly shipments, though forwarded by express and charged for as such, had come through, not in express, but in ordinary freight time; and upon all such bills a corresponding reduction was made.

The entire management of the railroad service on the part of those who represented the United States was, during the period referred to, characterized by much improvidence and utter disregard of law. Contracts have been heedlessly, and at times corruptly made, and the special emergency contemplated by the Army Regulations, and which might have excused so hurried and improvident a mode of proceeding, has not been shown to have existed. No instance has been brought to our notice in which an attempt was made to secure better terms for the government than those demanded. Special trains have, on more than one occasion, been ordered, at great expense, when, for aught that is shown, the service was intended solely for the comfort and convenience of the officer, his horses, and servant. Long trains, with steam up, have been kept standing—in one instance for sixty hours—awaiting the arrival of troops expected to depart from a point remote several hundreds of miles, and with which, through the telegraph, communications could have been had every hour and moment. We seek in vain in such transactions for that patriotic spirit which regards the war through which we are passing as a national burden, of which all should cheerfully bear a part. On the contrary, but too many of those connected with large public contracts, and with furnishing supplies for the army, have evidently looked upon the government in its life-struggle as the wrecker looks upon a ship wrestling with the storm, and in the minds of all such the thought as to how the most could be made out of the calamity seems to have been ever uppermost. We have pleasure in saying that we would not embrace in this remark the numerous class of very small claims from the interior for supplies of various kinds furnished our troops. They are uninfected by the ravenous rapacity which has prevailed elsewhere, and prove that the country merchants, farmers, and mechanics, have generally dealt honestly with our army, as would have done the merchants, mechanics, and manufacturers of this city had not the inexorable "middle-man" policy of the quartermaster's department excluded them from the honor of a direct commerce with the government of their country.

The extravagant use of the telegraph has evidenced the usual indifference to expenditure. At an early day it was seized by the military authorities, and the bills against the government are for the services which these authorities report to have been performed. No attempt was made to bargain with the companies for reasonable rates, nor to even place its extensive use upon a footing approaching, at least, that occupied by the "associated press." The rates charged to the United States are the same as those paid by every occasional customer, and the amounts indicate that the greater part of the correspondence of this department was for months carried on through this expensive medium. Men of the highest character and capabilities in connexion with telegraphing were examined before the commission in explanation of these accounts, and their testimony satisfied us that they could not be disallowed, in whole or in part, without manifest injustice to the parties concerned. The correction of these abuses must come from the department at Washington, and its effectiveness will, after the utmost precautions have been taken, depend much upon the *personnel* of those charged with the military operations of the country.

Claims for army clothing occupied many days in their examination. Some of them were found to be fair and reasonable, but the largest in number and amount proved, on investigation, to be extravagant. Among the largest dealers with the quartermaster's department in this class of supplies were Child, Pratt & Fox, R. Keiler & Co., and S. P. Brady. The two former do business in this city, and the third in Detroit.

As a preliminary measure it was deemed necessary to obtain possession of

such of the books and papers of the parties relating to these transactions as were within our reach, and by order of Major General Halleck (to whose courtesy and promptness the commission feel greatly indebted) the books and papers of Child, Pratt & Fox and R. Keiler & Co. were seized and brought before us. An intelligent expert (Mr. Hopkins) was engaged to examine and compare the purchases of those firms with their sales to the government. His testimony, showing the result of his labors, was given in the presence of the parties and subjected to their cross-examination, and proved that the profits charged were far beyond our previous calculations.

Child, Pratt & Fox are wholesale hardware merchants in this city. The aggregate of their bills filed was about \$494,481 81, of which the larger part was for articles not in their line of business. Had their transactions with the government in this department been confined to their legitimate trade, there would have been but little cause for scrutiny. It appears, however, that they furnished almost every description of supplies for the army, and at very heavy profits. The commission regarded their sale of hardware as legitimate, but in other supplies they were treated as "middle men," who had no more right to profits on their purchases from others for the government than the quartermaster himself.

After a careful review of the testimony, the accounts of the house were adjusted on the following basis:

First. On all hardware (in their line of business) ten per cent. advance was allowed for expenses, and 25 per cent. on costs and expenses for profits.

Second. On all goods bought by them in St. Louis, (except hardware in their line,) no advance on cost allowed.

Third. On clothing, canteens, knapsacks, army caps, &c., bought eastward, ten per cent.

Fourth. On cavalry equipments bought by them in Chicago, five per cent. advance; on same, bought in New York or Boston, ten per cent.—The per cent. allowed on the three last named classes of purchases being intended to cover all necessary expenses incurred up to their delivery at Saint Louis.

It is proved that offers were made by the merchants and manufacturers of St. Louis to furnish to the government at fair rates all supplies not in the line of Child, Pratt & Fox—which the latter furnished—but their offers were rejected, and they were obliged to sell to Child, Pratt & Fox in order that the latter might receive the profit they have charged, but which we have disallowed. Material deductions were in consequence made from the amount of these vouchers. Their claims, when presented in the name of their assignees, were disposed of on the principles already discussed and stated.

Besides the advantage to the government from the large sum thus saved, the action of the commission will no doubt exert a strong influence in restoring the commerce in army supplies to its former and proper channels. Of the "middle men," who formed a perfect cordon around the quartermaster's department, Child, Pratt & Fox were the most prominent and the largest recipients of the favors so prodigally dispensed. Why it was so a moment's glance at the previous history of the parties will sufficiently show. Towards the close of the late administration McKinstry was found to be, by appointment of Secretary Floyd, quartermaster in this city, and an order was issued removing him and appointing Colonel Crosman in his place. The latter is a gentleman of known purity of life, and of high reputation as a faithful and efficient officer. It was not considered by Child, Pratt & Fox that he would be an available man, and hence an appeal, through appropriate instrumentalities, was made by them to the then incoming administration to displace Crosman and restore McKinstry. How they succeeded, and how exultant they were in their success, will be made manifest from the following letter addressed by E. M. Fox from Washington to his firm in St. Louis, the 7th March, 1861:

"WASHINGTON, *March 7, 1861.*

"P. A. C. despatch received and answered to the major this day. Blair is a *trump*; he went to Cameron with me as soon as he was confirmed, and I heard Cameron promise to revoke the order, and retain the major assistant quartermaster in chief, and assign him to duty according to brevet rank.

"Crosman is a *dead cock*. You can bet; I am bound to follow him up close, and have the nail clinched. *There is not* the least doubt, *yet* I am going to have it done before I return. Holt holds over until Tuesday next, then the order will be made.

"I have got draft of Gerrish on Pike's Peak Express Company for \$1,200, which will be paid in four months, which Russell & Monroe say will be certain to be paid. Will meet Hooper again at New York on Monday, and hope to get an acceptance that I can use, or the money. I am tired; have walked a thousand miles; don't have time to go anywhere, and still going all the time watching the points.

"Truly yours,

"E. W. FOX.

"Messrs. C. P. & F."

The italics are the writer's. The original letter was placed in our hands, and is now furnished under an impression that it will serve to illustrate the animus and probable foresight of Child, Pratt & Fox, and their associates, in their plans and struggles to retain McKinstry in charge of the quartermaster's office in this city. In their vigilance in "watching the points," and their zeal in preparing this field of labor for their friend, they did not at all overestimate its fertility and subsequent productiveness for themselves.

R. Keiler & Co. are retail clothiers, but they were also favored by the quartermaster with extensive orders for goods out of their line. On scrutinizing their books and papers it was ascertained that they purchased largely in Cincinnati and this city, and sold the goods at once, at most extravagant profits, to the government. The quartermaster, had he discharged his duty, would have purchased the same goods from the same or other parties, and thus have saved to the government the heavy advance charged upon them. But this would not have put money into the purse of these middle men. The credit of this firm was evidently, at one time, somewhat doubtful; since on some occasions they found it difficult to buy goods except for cash. One ingenious method of filling orders was successfully resorted to: A large purchase was made in Cincinnati, under an agreement to pay cash for the goods on their arrival here the sellers forwarded the goods by Adams's Express Company, with instructions to collect freight and amount of invoice before delivery. When the goods reached their destination no money could be obtained; McKinstry, however, (then provost marshal,) came to the relief of his friends, and sent a message to the Express Company that if the goods were not instantly sent up they would be seized as a "military necessity." Martial law then prevailed, and few were bold enough to trifle with the orders of the provost marshal. The goods were, of course, surrendered, and at once turned in to the quartermaster at the customary large profit on their cost. R. Keiler & Co. received regular vouchers for this amount, and handed certain other vouchers to the Express Company for payment, from which, under the decision of the commissioners, deductions have been made. Thus the government and the Cincinnati merchants, who should have been permitted to deal directly with each other, have been alike made to suffer through these illegal and fraudulent factors thrust by military power between them.

It may be proper to state that Adams's Express Company filed with the commissioners a number of vouchers issued to Keiler & Co.; and after deduc-

tions had been ordered upon them, they desired a rehearing, on the ground that they had been compelled by McKinstry to deliver the goods, and had in consequence accepted from Keiler & Co. these vouchers in payment. We were satisfied, in the first place, that their principals (the Cincinnati merchants) had assented to the act of the company in receiving these vouchers; second, by doing so, they had elected to accept this form of satisfaction from their customers and debtors, (Keiler & Co.,) in preference to looking to the government of the United States for indemnity. It is also true that while military constraint was exercised in obliging the delivery of the first lot of goods, the subsequent shipments were made with the knowledge of what had occurred, and would probably occur again if necessary, and must therefore be held to be in law, as they were in fact, voluntary consignments.

Among the most marked of the "middle men" was S. P. Brady, a commission and forwarding merchant of Detroit, Michigan. He had no business connexions in St. Louis, but was an old friend and favorite of McKinstry. He repaired here from Detroit, and was engaged extensively in supplying army goods under the requisition of the quartermaster; furnishing cavalry boots, shoes, blouses, tents, cups, caps, socks, hats, drawers, blankets, canteens, shirts, drilling, knapsacks, pack saddles, and overcoats. He was wholly a "middle man," not being a dealer in any of the articles furnished by him to the government. We allowed him no profit whatever. For articles purchased in St. Louis, he was allowed the cost of the articles to him, and ten per cent. was added to the cost price in New York, five per cent. to the cost price in Detroit, and three per cent. to the cost price in Cincinnati, which allowances were simply intended to cover expenses. His dealings with the government were very large both before and since the 14th October; but he presented vouchers for only \$108,190 47, the amount of deductions from which were \$14,201.

The profits which Mr. Brady did realize and expected to realize from the government can be appreciated, when it is stated that his man of business, (Mandlebaum,) also from Detroit, located here, while these transactions were going on, charged for his services \$1,000 per month, as he deposed before us. It is but justice to Mr. Brady to state that the percentages charged by him to the government were much more moderate than those of any other middle man that came under our notice.

The sales of these three parties, Child, Pratt & Fox, R. Keiler & Co., and Brady, to the United States during six months previous to the 14th of October, 1861, could not have amounted to much less than one and a half millions of dollars. It is to be regretted that even since that date they have furnished supplies to the quartermaster's department to a very large amount, and at apparently the same high prices.

In order to carry on these extensive operations it became necessary for the parties to realize money by the sale of vouchers. Hence a large number of the claims are presented by their assigners. The commissioners have protected, as far as possible, these innocent third parties, but where they had no means of obliging the assignor to disgorge directly from other sources the full amount fraudulently obtained from government, it was held to be just to assess the deficit *pro rata* from the claims filed by the assignees.

It was in proof that repeated tenders had been made by manufacturers and dealers in many descriptions of supplies, but in no instance were they accepted by Quartermaster McKinstry. The parties desirous of selling were obliged to resort to the favorite "middle men," who bought at the lowest possible price, and sold to the government at the highest. The injury done to the United States by the irregular and unscrupulous mode of conducting purchases in the quartermaster's department in this city has not been confined to the pecuniary losses sustained. The faith of this community in government vouchers (as they are familiarly termed) was at one time unbounded, and any amount of money could

previously have been raised upon them. The disclosures recently made have inspired distrust to such an extent that it would be difficult at this time to negotiate any claim unless at a serious discount. The credit and the purse of the country have alike suffered.

On the 24th day of August, 1861, a written offer was made to General Frémont by one Theodore Adams, a returned Californian, for the building of thirty-eight mortar boats, at \$8,250 each. The proposal contained all the necessary specifications for the work, and was at once accepted in writing by the general. There was no advertisement, nor any opportunity whatsoever afforded to the boat-builders or other mechanics of this city to submit propositions. No inquiry appears to have been made with the view of ascertaining what the boats should cost, or whether they would probably answer the purpose proposed by their construction. Undoubtedly the mechanics of St. Louis, had they been allowed to compete for this heavy job, would have offered to construct the boats at a far lower price, and would have found it profitable to do so. It is known that the business of the country had been deranged and well nigh suspended in the west by our unhappy civil commotions; that Missouri had been especially scourged by the ravages of the rebel marauders, and that for want of employment the condition of the mechanics of St. Louis was in every way deplorable. Why under these circumstances this gigantic contract, amounting to \$313,500, and from which extravagant profits were to be derived, was thus without notice given to a stranger, and the St. Louis builders cut off from the slightest share in it, is a question which arises out of the facts, and to which we are obliged to listen, though we may be unable to make to it any satisfactory reply. It is no answer to say that many of the St. Louis mechanics were, in fact, employed by this returned Californian in building the boats. They were entitled, not merely to the work, if they were willing to do it on fair terms, as they certainly were, but to the profits on it also; and there was a third party, the government of the United States, that was entitled to what is more valuable than either the work or its profits, and that is, justice and fair dealing at the hands of its own officers.

Mr. Adams is not a boat-builder, and is understood to be without capital. As these boats were entirely experimental, it may be safely assumed that under any other course of administration one, or a few of them at most, would have been finished and subjected to proper tests before incurring the vast expenditure which the completion of the whole must involve. No such precaution, however, was taken, and the boats were all built, and delivered, and accepted together. There are probably many more of them than are needed, and, while it is sincerely hoped that they may, it is by no means certain that they will, prove efficient in the warfare for which they are designed. The artillery officer who superintended the trial to which one of them was subjected stated to the commission that the iron sheeting which surrounds the boat as an armature, and which cost for the whole at least \$29,140, proved to be not only useless, but an incumbrance, and would have to be removed. This loss, should it occur, as it is anticipated, could easily have been saved to the government by experiments at an earlier day.

These boats are little more than piles of logs securely pinned together, and provided with a deck or floor, a small chamber for magazine, and an iron sheeting six or seven feet high running entirely around, and intended as a protection from musketry. Their construction is of the simplest and the work upon them of the coarsest character.

Two experienced and intelligent boat and engine builders, under the direction of the commission, examined them while lying at the wharf of this city, and after carefully measuring the wood and iron materials, and ascertaining their value and that of the labor upon them, they reported the boats worth \$4,756 02

each. Their reports, which they verified under oath and thorough cross-examination before the commission, were in detail, showing minutely the amount of each kind of materials, its value, and the worth of the work performed upon them. To this estimate must be added \$10 for under valuation of capstan and windlass, and \$161 22 for anchors, chains, sweeps, and blocks; which give \$4,927 24.

Both of these witnesses are men of the highest character for probity and for intelligence in their respective pursuits. One of them, Samuel Gaty, has been in the foundry and machine business in this city for forty years; and the other, John D. Daggett, has been a boat-builder here for twenty-five years. Complete confidence may be reposed in the estimate which they have submitted as to the cost of work and materials.

These witnesses, without urging it, suggest a profit to Adams of twenty per cent., which they say would be a liberal compensation. Had he built one, two, or three boats, it would have been liberal; but when the contract is for thirty-eight boats, to be built together, such a profit becomes exorbitant. It would give him \$37,448 24 for his personal supervision of the work for between three and four months. This will appear the more extravagant when it is stated that during the same period of time he was superintending the building and repairing of other boats at St. Louis for the government, from which he realized large profits. We have, therefore, allowed Gaty and Daggett's estimate of the materials and labor, with the slight addition mentioned for articles omitted and ten per cent. profit on the whole—being \$5,419 98 for each boat, or \$205,959 24 for the whole. This will protect the government from a loss of \$107,541, and will secure to Adams for his superintendence of the construction of the boats a compensation of \$18,724.

Two other witnesses who saw the boats at Cairo valued them higher, but said that mechanics of this city would have built them at \$6,000 each, and that it would have been a good job for them. It is probable in this they set down the profits of the mechanics at twenty per cent., which in so large a contract is utterly unreasonable. These witnesses did not make the strict examination and measurement which were made by Gaty and Daggett, and their testimony in no point impressed us as to be compared in its reliability with theirs. We have not hesitated, therefore, to make that of the latter, modified only in the rate of profit, the basis of our judgment upon the claim.

In connexion with the erection of the Benton barracks, in the suburbs of this city, a variety of claims were presented. These buildings were commenced in August of last year, and before its close they were nearly completed, at a cost of over \$108,000. In this calculation no allowance was made for the occupancy of the site, nor for the use of the extensive sheds and houses in the fair grounds adjoining the barracks.

The contract for the roofing of the barracks was proved to have been tainted with fraud. Competition was sought through advertisement, and proposals were regularly filed. The bidders testified, however, that on consultation with the government architect (A. B. Ogden) he suggested that a bonus of from 25 to 50 cents per square should be added to the bids for his individual benefit. In two instances it was shown that drafts on Quartermaster McKinstry had been given for Ogden's share of the profits, amounting, in one case, to \$700, and in the other to \$1,400; but as neither of these parties succeeded in getting the contract, the drafts remain unpaid, and the architect lost the bonus, of which he had prepared to swindle the government, in whose service he was. While he had his plan and his favorite, Quartermaster McKinstry had also his, and in the unequal contest between them the quartermaster had an easy triumph.

It was proved that experienced and responsible roofers had proposed for the work at \$2 50 and \$2 75 per square; yet, as if to make a mockery of the advertisement under which these offers had been made, McKinstry awarded the

contract to a Mr. Thomson at \$3 50. It did not appear that this person had any knowledge of roofing, but, for reasons which may be conjectured, he did not find the lower bids of those who had this knowledge at all in his way. The contract was large, and the victory was anything but a barren one, which this favorite of the quartermaster gained over the simple-minded mechanics who had honestly made their proposals. In the whole range of the frauds which our investigations have brought to light nothing more shameless than this has appeared. It is perfectly naked, in the hideousness of its profligacy.

Notwithstanding that martial law had been declared, and the freedom of the popular mind had suffered great repression from the presence of the stern power which had thus announced itself, the indignation excited among the mechanics was such that the conduct of the quartermaster, and especially of his architect, was freely spoken of. Among the persons who ventured to speak of the transaction as it occurred was a Mr. Pond, who was interested with his son-in-law (Mr. Clapp) in a bid for the roofing made by the latter. When his words were carried to the ears of Quartermaster McKinstry—then Provost Marshal—he sent a summons ordering him to appear before him; and upon his doing so, and admitting that he had derived his information from Clapp, a file of soldiers was ordered to arrest the latter, and to conduct him into Provost Marshal McKinstry's presence. What occurred then and immediately before we present in the language of Mr. Pond, who was present as one of the accused, and gave his testimony before us under oath.

TESTIMONY.

"Claim for roofing Benton barracks."

"CHARLES H. POND sworn :

"I got a letter purporting to come from McKinstry's office to come to his office. This was the middle of the afternoon. I did not go that afternoon, and when I got home my wife told me that a gentleman had been there, and ordered me to appear before McKinstry at his house that night at seven o'clock. I went there precisely at seven, and the servant girl told me that McKinstry had been gone a half an hour, and would not be in before eleven. The next morning I found him in the street, and he told me to come to his office; that he did not do business out in the street. I went to his office, and handed him the little summons he sent me. He said, 'Yes, you have been reporting about this city that I or my agents have been swindling the government.' I told him that Mr. Clapp, my son-in-law, came to me, and wanted to know if I would take a contract with him for putting on the roofing on Benton barracks; that I told Clapp that I would, if everything was all right; that Clapp said he would give me one-third of the profits, provided I would take hold with him; that there was nothing more said at that time between Clapp and me; that the next day Clapp met me, and said, 'I think I shall get that contract,' and I asked him why. Says he, 'I have given Mr. Ogden, Mr. McKinstry's agent, a draft in favor of P. L. Bierce for \$700.' Then I told Clapp that I did not want to have anything to do with it, if that was the case. McKinstry says, 'Did Clapp tell you that?' I said, 'Yes, sir.' 'Well, you shall prove it, or, by God, I will send you down to the arsenal or Cairo, [I can't say which,] and put you on bread and water.' I said, 'Send for Clapp;' and he spoke to Selover or some other person present: 'Have him arrested and brought in here forthwith.' They went out with an armed posse, and brought Clapp in in a few minutes. Says I, 'Mr. Clapp, did you not tell me that you agreed to give Ogden \$700 to get this contract for you?' Says McKinstry, 'Stop! by God, I am lawyer enough to ask that question.' Says McKinstry to Clapp, 'Did you give Ogden \$500 or \$1?' Mr. Clapp said, 'No.' Then says McKinstry, 'I sentence you to

the arsenal for five days on bread and water.' Says Clapp, 'Won't you let me explain?' 'No,' says McKinstry, 'you have got your sentence, or you may take such an oath as I will write,' or words amounting thereto. Says Clapp, 'I gave the draft to Ogden, and that Ogden wrote it, and he copied it.' McKinstry said again, 'You have got your sentence.' I then begged McKinstry to send for Bierce, and he did send for him, but got right up immediately out of his chair and said, 'The court is adjourned.'

"During the conversation, while Clapp was there, McKinstry got right up and passed by me, and says: 'By Christ! I am going to stop the people of this city from talking about this quartermaster department's swindling.' McKinstry asked me, during the conversation, 'if I had reported what Clapp told me.' 'I told him that I had told it to Bay.' Thomson, the man who had got the contract for putting on the roofing, came up, and he whispered or spoke so low to McKinstry that I could not hear him. McKinstry got up and says to me, 'I understand one more thing, that Clapp refused to take the oath, and I sentence him to five days more at the arsenal on bread and water.'"

Robert Campbell and John Howe, two merchants of this city, were there.

Every word and act of the Provost Marshal and Quartermaster McKinstry, throughout this interview, reeks with proofs of conscious and overwhelming guilt. The scene seems scarcely American. It suggests a barbaric age and Asiatic institutions. No Cadi of an eastern sultan, with the bastinado at his beck, could have been more coarsely insulting or more brutally despotic. With the ill-defined and then practically almost absolute powers of the provost marshal to silence criticism upon his administration as quartermaster, it may be safely inferred that after this storm of passion and profanity, McKinstry, for a time at least, had rest, and that the paths of his middle men, like his own, were paths of "pleasantness and peace."

As was to have been expected, the contract, thus fraudulently awarded, was faithlessly executed. A cheap cement was employed, and in consequence of its lack of adhesiveness the sand soon began to wash from the felting, and numerous leaks appeared in a few weeks after the completion of the work. The roof is in itself inferior and infirm, and is rapidly becoming dilapidated, and the probability is, that unless thoroughly repaired, it will be almost valueless before the close of the present year. We felt that we were liberal in allowing \$2 50 per square, for which price undoubtedly a far better job would have been done by one of the mechanics making proposals, had the government been honestly dealt with.

Among the curious and unexpected claims presented was one for five hundred tons of ice, ordered by General Frémont to be sent from St. Louis to Jefferson City, at a cost of several thousand dollars. The purchase and shipment were made in the month of October, when the weather was becoming cool, and when the consequent decline in the price of ice offered temptations to make large investments. On its arrival at Jefferson City there could not be found a suitable place in which to store it—the ice-houses there having no commensurate capacity and being already occupied. But a small part of it was used by the troops, the previous supply at Jefferson City being sufficient. The principal part melted, and probably a part of it has passed the winter in a solid state. As, in consequence of the approach of winter, the purchase was made at unusually low rates, the commission discovered no sufficient ground for rejecting or reducing the claim.

In rents of buildings for barracks and hospitals the usual arbitrary course was pursued. They were rarely occupied under any agreement. The usual course seems to have been to give an abrupt notice to the proprietor of a college, a theatre, a beer garden, a race-course, or any other property that chanced to attract attention, that on such a day or hour it would be occupied by the United States. This orientally despotic power was so agreeable to the tastes of the provost marshal and quartermaster that he rarely condescended to relax

it by any such soothing recognition of right as a contract, or a parley even, would have implied. Bills have been presented, generally demanding very high rents for these establishments, and almost invariably accompanied by a claim for damages. The bills we have reduced to a proper standard. It became the duty of the commission to reduce or allow according to their estimate, based on reliable testimony.

Among the buildings formally leased was the palatial residence of Mrs. Brant, a relative, by marriage, of General Frémont. It is situated on Chouteau avenue, in this city, and was taken for "headquarters" at a rent of \$6,000 per annum, payable in monthly instalments. The lease, which bears date the 25th July, 1861, and is for one year, describes the property as "*one three-story marble house and lot of ground, together with all the furniture, silver plate, table ware, kitchen utensils, stable, and every other article in use in and about the house.*" No such provision as this has been made for any major general in our history. The contract was as clearly illegal as it was culpably extravagant. The house was occupied by General Frémont as his headquarters, and also as his family residence, and several rooms in the extensive establishment were assigned to members of his staff. It was proved before us that the main building, out-houses and grounds, were worth \$3,000 per annum. We determined that the remaining \$3,000—or at that rate—must be paid by those that used and enjoyed "*the furniture, carpets, silver ware, table ware, and kitchen utensils.*" It so happened, however, that the rent for two months and six days had been paid at the rate agreed on in the lease, and as but one-half of this was for the house and grounds, the remaining half (\$556 47) was an illegal payment, and the government was entitled to reimbursement. Mrs. Brant having filed a claim for two months' rent, ending the first of November, amounting to \$1,000, we allowed one-half of it, being for the rent of the buildings and grounds, and satisfied this allowance by setting off against it the previous payment for two months and six days of "*the furniture, carpets, wares, utensils,*" &c., &c., which left a balance in favor of the government of \$56 47.

When General Halleck arrived and assumed command of this department he at once took rooms appropriate for his headquarters, and directed this establishment to be surrendered to Mrs. Brant's agent, which was done.

Among the claims for permanent military defences in this department were those for the pontoon bridge thrown across the Ohio at Paducah. Although it proved to be absolutely worthless to the government, that fact could not be considered in determining the question whether the merchants and mechanics who had supplied the materials and labor that entered into it should be paid. The entire cost was between \$120,000 and \$125,000. But a small part of the bills had been paid, and the remainder, after a thorough scrutiny, were found to be untainted by fraud or extravagance; and as the failure of the enterprise was ascribable not to the claimants but to the folly which planned it, these claims were allowed without deduction. The Ohio river is known to be subject to sudden freshets, and when thus swollen bears always upon its bosom masses of heavy drift wood which no pontoons, however strongly united, could possibly resist. Soon after the completion of this structure, the flood as must have been foreseen, came, and with it the drift wood, and the bridge was at once swept away. We learn that more than half the barges on which it rested were carried by the current beyond our military lines, and are a total loss; while the others are scattered for many miles along either bank of the river, serving no other purpose than to provoke a sneer or a sigh at that greatest of the military follies in the west—the Paducah pontoon bridge. Could it have been supposed, against all the teachings of experience, that this bridge would be permanent, it is still not easy to perceive what purpose was proposed to be accomplished by it. As it was connected by no railroads on the Illinois shore, neither troops nor supplies could be expected to pass over from that quarter,

and both troops and supplies leaving Paducah for, or coming to it from other points, would naturally and almost necessarily be conveyed by steamers, of which the greatest abundance and of the largest capacity were then and are still in the service of the government. The only conceivable end that it could have been intended to subserve was to provide the means of retreat for the garrison at Paducah, in the event of a sudden surprise. It was a costly provision against so remote a contingency, and finds little justification in the subsequent conduct of the brave men for whose escape from the enemy so elaborate preparation seems to have been made. This bridge, like the feeble forts that were built crouching around the suburbs of St. Louis, appears to have been constructed upon the idea that the struggle for the Union in the military department of the west was to be a wholly defensive, if not a despairing warfare.

Of all the expedients through which the public money has been squandered in this department none seems more unpalliated than the contract entered into on the 22d day of September, 1861, with A. L. Mowry, of Cincinnati, for the construction of fifty box and fifty platform railroad cars, the former at \$825 and the latter at \$700 each, making an aggregate for the whole of \$76,250. As the government is not a railroad proprietor, it has not heretofore occurred to those charged with its administration that it should become the owner of railroad cars. The reason assigned for the purchase of these 100 cars was that the rolling stock on the Missouri roads was not sufficient to meet all possible emergencies which might arise in the transportation of the army and its supplies. In answer to this it must be stated that George R. Taylor, the president of the Pacific railroad—which is the principal thoroughfare connecting with the seat of war in this State, and the only one over which troops in sufficient numbers to overtask the capacity of the road would be likely to pass—offered, on the 30th of August, 1861, to General Frémont, that if the government would “advance” to him \$10,000 he would, within two weeks, repair the bridges that had been burnt and rendered impassable and the four locomotives that were out of order, and by a change in the cars would put the rolling stock in such condition as to increase the capacity of the road for transportation to 7,000 troops moving together, and would have left abundance of cattle cars for baggage, horses, &c. This would have been a capacity fully equal to every possible emergency in the service. The proposal was formally made in writing and the letter delivered to the commanding general through his aide-de-camp and military secretary, I. C. Woods—Mr. Taylor having frequently, but in vain, sought a personal interview with him. The offer was, not that \$10,000 should be bestowed upon the road, but that, in consequence of its crippled and exhausted condition, growing out of the destruction of its bridges by traitorous marauders and the almost total loss of its business, this sum should be “advanced,” to be repaid in transportation services, to enable the company to make the necessary repairs. Had this proposal been acceded to, it would have rendered wholly unnecessary the heavy outlay for these hundred cars. In view of the circumstances in which the country was placed, a proposition coming from a responsible and patriotic source, which would have protected the government from so large an expenditure, had some claims upon the attention of the commanding general, but it received none whatever. Twenty-three days thereafter the contract with Mowry was reduced to writing and the job went on. Oppressed and struggling as was the treasury, the commanding general felt justified in bestowing, in “advances,” on E. L. Beard \$191,000, and giving him an imperative order for \$60,000 more, as a compensation for fortifications, which—according to the estimate of General Cullum—should not have cost more than \$59,456 27, and could not possibly have cost exceeding \$70,000; but he could not advance to the Pacific railroad \$10,000, to be immediately repaid in the transportation of troops and supplies, although it was well known that by making such an advance he would save to the government an expenditure of \$76,250.

As in the case of the mortar boats, and all others of any magnitude, there was no advertisement or publicity of any kind. All chance of competition being thus excluded, the prices were, of course, entirely agreeable to the parties concerned. The contract, as usual, was sub-let in part, and the cars were furnished, though not in contract time, and were accepted by "Superintendent" Castle. They were by no means the best of their class, and were inferior to the quality contracted for. Quite a number of intelligent and experienced witnesses, experts in railroad matters, after having examined them, testified as to their value, both at the instance of the claimants and of the government. There was some conflict in their testimony, but its weight was decidedly in support of the estimate adopted by the commission, which was \$650 for the box, and \$525 for the platform cars. The sums thus allowed will reimburse all outlays for materials and labor, and will give a reasonable profit on both. While this does full justice to one whose eager cupidity is entitled to no more, and saves to the treasury \$17,500, which he was preparing to grasp, it leaves the cars, useless as they are, on the hands of the government. They are now scattered along the different roads and in the different depots, and are apparently at the disposition of any of the companies that may chance to have use for them. As the government does not and will not need them, we would recommend that they be sold to some one or more of the railroad companies of this State, which we presume would be glad to purchase and pay for them at fair rates, in transportation services already or hereafter to be performed.

The contracts for arms and munitions of war, under General Frémont's administration, were entered into by his special order, and not through the Ordnance bureau. Payments were, no doubt, made by his direction, in many cases, which, of course, would not be reported to us. The amount of this class of claims remaining unpaid and filed is \$641,691 58, from which, after examination, there has been deducted for excess of price an aggregate of \$40,474 13.

The law and regulations are very strict in requiring that all such purchases shall take place by the authority and under the special supervision of the Bureau of Ordnance. There is much wisdom in this requisition. Those in charge of this branch of military administration are, from their knowledge and experience, supposed to be experts in arms and munitions of war, and the law contemplates that the government shall avail itself of their skill and experience in supplying its arsenals and armies. The steps taken in this department for procuring arms were singularly loose and seemingly utterly ignored the existence of the Ordnance bureau. They were generally obtained in the eastern cities, but in some instances were bought here of speculators who had been attracted to this point, by the reputation as the El Dorado of army contractors, which this department rapidly acquired. The arms thus irregularly obtained, often through telegraphic despatches and without any certain knowledge of their character, do not seem to have been subjected to the tests prescribed by the regulations for verifying their fitness for the service. The precaution thus so heedlessly neglected is essential to guard not merely the pecuniary interest of the nation, but those higher interests which are staked upon the issues of the battle field.

Although the advice of the authorities of Washington could at any moment have been had through the telegraph, it does not appear that they were at all consulted. We deem the principle that all arms and munitions of war shall be secured under the careful scrutiny of the Ordnance bureau so important as a national safeguard, that we hesitated to recognize so habitual and inexcusable a violation of it as was brought to our notice. Yielding, however, to the pressure of the times, and to a disinclination, in the midst of a severely contested war, to have controversies with its generals in the field, the government, as we had occasion to ascertain, has in various cases waived the legal question and treated this class of claims as valid. This has been done with apparent reluctance, but

we have not felt justified in departing from the temporary policy thus indicated, though we cannot protest too earnestly against these cases becoming precedents hereafter.

At an early period in our sessions, suspicions arose in regard to vouchers signed by R. B. Hatch, assistant quartermaster at Cairo. They were laid aside, and directions given to place them in a distinct class, entitled "Cairo claims." When they came under consideration a new feature of gross fraud was presented. This officer, from indolence or other cause, rarely signed his name to any voucher, but had his signature made through his clerk, (Dunton,) whose name, however, did not appear as agent or otherwise. This irregular and illegal course of action was fully proved by the claimants themselves. It appeared satisfactorily that Hatch was in the habit of issuing vouchers entirely false, and to such an extent did this practice seem to have prevailed that we ceased to feel it safe to regard such papers as importing evidence of verity. In one case it was shown that he had bought about 263½ tons of ice from Waddam, Willard & Co., of Chicago, at \$10 50 per ton, and issued to them for it a voucher for a fraction over 138 tons, at \$20 per ton, amounting to \$2,765 80. This left in his hands, as his private property, and for which his returns would show no responsibility to the government, about 125 tons, which he could have at once disposed of to the government or other consumer. If he sold it at the then wholesale prices at Cairo, the fraud netted him upwards of \$1,300. The probability, however, is, that he immediately disposed of it to the government at from \$17 to \$20 per ton, as these are the prices charged for ice in all his vouchers that have been submitted to us. The transaction would, of course, be concealed from the department by using in the voucher for the 125 tons the name of some man of straw instead of his own. Indolence seems to have characterized his office quite as much as fraud. Mr. Waddam deposed that he spent four days in efforts to have the voucher issued before he succeeded, and when it was about to be done, Hatch asked him if it would not suit him as well to have the ice set down at \$20 per ton. Not perceiving the effect of this falsification upon the government, he said he cared not, if it was for the full amount due him. Other witnesses stated that they had importuned Hatch for weeks before they could prevail on him to deliver their vouchers.

In another instance it was proved that Hatch had employed a "middle man," Samuel Rhodes, of Pekin, Illinois, to buy lumber for the government at Chicago, and it was testified by Rhodes's agent (J. M. Gill) that it was purchased at \$9 per M., and delivered at Cairo at \$10 50 per M., (government paying freight at the rate of \$7 per M.,) and that there was issued by Hatch the voucher, which he presented for lumber at \$17 50 per M. In this case, as in that of the ice, the quantity certified for was lessened, in order that the amount allowed should tally with the bill of the claimant. This gave the "middle man" \$1 50 per M. for his services, and left the officer as his reward 17ths of the lumber to be disposed of for his own use, which it is presumed was done. The amount was considerable, and the yield to him commensurate. Under no theory which we have been able to adopt can we regard these well established facts as compatible with the integrity of this officer.

There is much reason to believe that but a small part of the heavy claims originating under Hatch's administration of the quartermaster's office at Cairo have been presented before the commission. They have possibly been withheld from a desire to protect them from the scrutiny to which it may have been thought they would be subjected before us. There are indications that the large dealings in coal, growing out of the steam and gunboat service, have been frequently tainted with fraud.

We feel justified in warning the department against all vouchers bearing the name of R. B. Hatch, assistant quartermaster. None of them should be paid without a thorough investigation. Were an intelligent and faithful commissioner

sent to Cairo, with power and directions to examine the claimants under oath, and such other testimony as might be obtained, the truth would probably be generally arrived at.

The claims for forage were large and were strongly suspected. Much time was devoted to the transactions out of which they arose, but without any satisfactory results. We were convinced that extensive impositions had been practiced, through short weights and the delivery of damaged and worthless hay, but, from the loose manner in which the business was conducted, we could not fix the responsibility upon any particular dealer. Among other petty devices resorted to was that of packing the bales in heavy billets of wood, and it was testified that from this source alone a large furnace was supplied with fuel.

Among the dealers in forage was E. L. Beard, a resident of California. Vouchers issued to him for forage were presented before us to the amount of about \$115,000, but all in the name of his assignees except one for \$17,768. Having learned that he had succeeded in abstracting from the treasury large sums, through a contract alleged to be fraudulent, for the erection of certain forts in this vicinity, it was felt to be our duty to make an inquiry into the facts with a view of setting off against the claim under consideration any right to reimbursement which might have accrued to the government from payments under the contract referred to. The history of his connexion with these forts we find to be this: General Frémont, on entering upon his command in this department, came to the conclusion that St. Louis, his headquarters, should be fortified. It was determined by him, without any conference with the government, so far as is known, that the defences on the land side should consist of ten forts or earthworks, which he at once directed should be built. Contrary to law and all usages, the sites of the forts were selected, the plans for them adopted, and their construction entered upon without any engineer officer of the regular army having been consulted. General Cullum, now on General Halleck's staff, and who has been for thirty years in service in the corps of engineers of the regular army, and has the highest reputation as an officer, by the direction of General Halleck, made a thorough examination of these forts, and had the work and materials in them measured and carefully estimated. The results of this examination he submitted to us under oath. So far as the sites are concerned he stated they had been so unskillfully selected that the forts were useless for the purposes of defence; that they were so near the city that an attack upon them would be necessarily an attack upon the city itself. Had they been located, he stated, on the fine range of hills a mile or two to the westward, commanding positions would have been secured, and any conflict in which they might engage would not necessarily have involved the city; and had they been intended to overawe or resist the city, two would have been quite sufficient. He added that they were not constructed upon any principle of military engineering with which he was acquainted, and that though he had seen most of the fortifications of the old world, he had looked upon nothing like these. According to his testimony, the five lower forts, erected under the supervision of Major Kappner, were larger and better built, and would properly cost more than the five upper, constructed by E. L. Beard, as we shall now proceed to state. The forts had been located, and the work on them had progressed for several weeks, under the direction of Major Kappner, when, on the fifth day of September, 1861, a written contract was entered into with E. L. Beard, providing by its terms for the construction of all the forts at rates for labor and materials as therein set forth in detail. The prices agreed upon were so exorbitant that they shocked even Quartermaster McKinsty, and he took the extraordinary precaution of writing upon the paper, with his own hand, that it had been executed by the special order of General Frémont. It is evident that even he felt humbled at being used as an instrument in the consummation of such a fraud. General Cullum deposed that the five upper forts, numbered 6,

7, 8, 9, and 10, with the connecting "batteries," would cost, according to the terms of the contract, \$298,326 78, whereas \$59,456 27 would be a full price for them, according to customary rates. An effort was made to conceal somewhat the true character of the agreement by stipulating that the work should be finished in five days. It was not, in fact, so finished, nor could it have been, nor was it expected that it would be. For the night, as for the day labor, a just allowance was made by General Cullum. Although in its terms the contract embraced all the forts, Beard, for some unexplained cause, assumed the control of and built but five; the others, Nos. 1, 2, 3, 4, and 5, were continued as they had been begun, under Major Kappner, and were paid for by the government, the aggregate expenditure being \$61,342 50 $\frac{1}{2}$. If to this be added the value of the work performed upon them by United States soldiers, being \$14,000, the cost of them would be \$75,342 50. As the forts were progressing well in charge of a professional military engineer, and at only a fair expenditure to the government, why Beard, who had no knowledge of military engineering, and was only conspicuous as an extensive dealer in forage, should have the entire construction of the forts assigned to him, without any bond for the faithful execution of the work, finds no explanation except in the unparalleled compensation he was to receive. He was the especial friend of the commanding general. After this brief recital of the facts, it must excite the astonishment of all to learn that Beard has already received, in part of his claim for these forts, \$191,000, about three times what they should have cost. The following are the dates and amounts of the payments, or, as General Frémont in his order designates them, "advances," which have been ascertained to have been made:

August 29, 1861.....	\$10, 000 00
September 2, 1861.....	15, 000 00
September 5, 1861.....	60, 000 00
September 6, 1861.....	66, 000 00
October 3, 1861.....	20, 000 00
October 15, 1861.....	20, 000 00
	<hr/>
	191, 000 00
	<hr/>

It is very possible that other sums may have been lavished upon him through some assistant quartermaster, who has not yet reported; so that up to and including the day on which the contract was entered into there was certainly paid Beard \$85,000, and that without the slightest guarantee or indemnity of any kind to protect the United States in the event he failed to fulfil the agreement. These vast sums were not taken from an overflowing treasury. During the period covered by these payments or "advances," from August 29 to October 15, inclusive, General Frémont had, under the pressure of his military authority, seized or borrowed from the banks \$752,102 42, besides large loans effected with private individuals. At La Grange, distant less than a day's journey from St. Louis, it will be remembered that General Pope, in command of the United States forces, received on September 4 from the branch of the Union bank \$62,877 50 *for safe keeping*, which, together with \$5,373 10, delivered to him *for the same purpose* by the bank of the State of Missouri at Canton, he at once forwarded to this city, to be placed in the vaults of the parent banks. On the arrival, however, of these funds, they were seized and appropriated by order of General Frémont. The contract with Beard had just been executed, and the forts were only begun. Comparing the dates it will be seen that on the day these funds fell into the power of General Frémont, September 5, 1861, \$60,000 was "advanced" to Beard, and \$66,000 ordered to be "advanced" the day after. The effect of this proceeding on the Union bank has been stated. Its

credit was ruined, and its stock depreciated one-half, thereby destroying the living of a multitude of people, many of them women and children. It is thus apparent, that at the very time this betrayal of the public honor and this sacrifice of the fortunes of the innocent and the helpless were made, the avarice of this favorite contractor was being gorged from day to day by the enormous sums mentioned.

During this period the troops under General Frémont's command were unpaid, and a mutinous spirit had in consequence been manifested. Those who had furnished them with clothing and food, and the cavalry regiments with horses and equipments, and those who had supplied, under contracts with the commanding general, arms and munitions to the amount of more than \$600,000, were also unpaid. Money could not be spared for these purposes, nor to satisfy the current claims of the humble mechanics and laborers who built the five lower forts at an actual cost to the government of only about \$61,342 50, of which to this day \$45,762 58 remains unpaid, though the pinching want of these laborers and their families was continually clamoring for pay. But for Beard the military chest of the commander of the department was always open; not the less so because his continual and exhausting drains upon it had to be supplied from the coffers of the banks and through violations of the public faith. It was depoted that the \$66,000 was, in culpable disregard of law and duty, paid by the quartermaster, under the positive order of General Frémont, out of money that had been sent from Washington, and was intended for the purchase of wagons, horses, forage, transportation of troops, and for the general equipment and movements of the army.

Not satisfied with this waste of the public money upon his friend, on the 19th October, in contempt of the direction of the Secretary of War forbidding it, General Frémont issued a peremptory order to Quartermaster Allen to pay to Beard \$60,000 more on account of these forts. This he refused to do, and to his courage and fidelity, and the subsequent removal of the general from his command, is the country indebted for its escape from the payment of this order and the further sum of \$47,326 78, which no doubt would have been claimed under the contract, and would have been enforced, as the previous payments had been, by military power. So the matter stands. At least \$191,000 has been received for work worth not exceeding, under a most liberal estimate, \$70,000, and Beard still holds an order for the \$60,000, and a claim under the extravagant provisions of the contract for yet \$47,726 78. Neither this order nor claim has been filed before us. It has been doubtless deemed safer to suppress them for the present, under the impression that in the years to come, and in the halls of Congress, a more propitious time and place for their presentation will be found. It is that, when these fraudulent demands upon the public treasury arise, they may be confronted with the shameless history which belongs to them that we have made this record.

The cost of the five lower forts, including the value of the soldiers' labor, we have set down at \$75,342 50. Although being larger and better constructed than the other five, they should have cost more than they with their connecting "batteries," yet the actual outlay upon them was doubtless greater than it would have been but for the fact that they were under the superintendence of a foreigner, who could not speak our language, and must, therefore, have labored under many disadvantages in his contracts and settlements. General Cullum states that the five upper forts should not have cost, with their connecting "batteries," exceeding \$59,456 27; but wishing to be liberal and make every allowance for the haste with which it is insisted the work was done, we have in our estimate treated them as costing \$70,000. We append, as a part of our report, General Cullum's letters to the secretary of the commission, with the accompanying estimates, marked A.

The allowance made to Beard for forage, on his claim for \$17,768 68, was

entered by us to his credit on the just claim to reimbursement for at least \$120,000 which accrued to the government from the illegal advances made to him as set forth.

What became of these vast amounts of the public money after they reached the rapacious purse of Beard we know not. We can only speak negatively and say that they did not go into the hands of the mechanics and laborers who trusted to his integrity and built the forts for him. He himself has disappeared from St. Louis, and we are assured that a large part of the humble men who toiled for him remain unpaid, and that the distress which his treachery has inflicted upon them and their families is in every way deplorable. Of the claims on the part of these laborers about \$23,000 has been brought to our notice. Sad as was the exhibition of oppression and turpitude which they presented, of course we could give no relief.

It should not be forgotten that while these amounts were being squandered upon Beard, he had also large forage contracts, under which, as already stated, claims of about \$115,000 have already been presented, and was also empowered by the commanding general to fill (of course upon his own terms) a requisition for supplies amounting to at least \$100,000, and the filling of which belonged by law to the quartermaster.

Among other claims submitted to us was one of Louis Bitting, amounting to \$6,500, for furnishing fifty horses. Accompanying it was the copy of what purported to be a contract entered into by Captain Turnley, on the part of the government, and Aug. Sacchi, of New York, "to purchase 1,000 horses and mares in Canada, not over 16 nor under 14 hands high, and deliver them in St. Louis at \$130 a head," and also a copy of an assignment of the contract by Sacchi to Bitting. Having been informed that the contract was made by Captain Turnley by direction of the military secretary of the general commanding, and not from any judgment of his own, and it appearing upon the voucher as filed that the same quartermaster had refused to pay the voucher issued in the name of Sacchi to Bitting, we gave notice to the attorney of the claimant that the latter must appear in person, with a view to his examination under oath; and also that he produce the original contract and assignment. The reasons why this was required will sufficiently appear in the testimony of Captain Turnley before the investigating committee. Though the claim was for the large sum of \$6,500 none of the original papers were filed, nor did Mr. Bitting ever appear before us. It is hardly possible that he would have run the chance of losing a claim of such magnitude unless there had been some urgent reason for declining to submit himself to such an examination, either on his own account or on that of the persons from whom he obtained an assignment of the contract.

There were two claims filed before us by assignees of J. W. Parrish, one for \$114,180 60, and the other for \$13,200. In the latter the voucher was filed, in the former only the authority under which the purchase was made, which was substantially this: On the 18th September, 1861, General McKinstry authorized by letter Joseph W. Parrish, of Peoria, Illinois, to purchase 1,158 horses, at not exceeding \$110 each, for a regiment of cavalry to be raised in Illinois, and to be called the "McKinstry Guards." The authority was given without any advertisement whatever, and before the regiment had been recruited. The other claim has been in this city, very nearly if not quite all the time we have been in session, as we have been assured; but the parties decline to submit it. Supposing it would be filed, we took the testimony of a single witness in relation to it. By that testimony it appeared that these horses were purchased at a price not exceeding \$80 each, on an average. As these claims seem to belong to the same parties, we considered it not judicious to pass upon the small one, when the large one was not before us. We return the one filed to the War Department, and recommend that the quartermaster general strictly investigate it before making payment.

There has been no opportunity afforded us for making any satisfactory examination of the claims for building and repairing gunboats, except the Essex. The bills for the entire work have not been filed, and in their absence it was not possible to determine upon the verity and reasonableness of those before us. We have taken some testimony in regard to the matter, but not enough to aid the department materially in the disposition it may hereafter make of those cases. We would suggest that, in any settlement which may take place with Mr. Eads, the actual cost of the repairs should be ascertained from the testimony of skilful and reliable experts, and that there shall be allowed him for profits, not the commission which may be demanded, *eo nomine*, or through exaggerated charges for labor and materials, but that only which will afford him a fair compensation for his services.

Several firms from Cincinnati have presented claims against the government, but without any vouchers, insisting that they had sold merchandise to the United States, ordered by G. L. Dart, claiming to be their agent, for which we find that the vouchers have been issued to Dart himself, at greatly enhanced prices; but as these vouchers have not been filed before us, we could make no examination of them. A few days since a letter was received from the agent of Mr. Dart, proposing to present his claims, which we believe have been thus long withheld for the purpose of preventing investigation. As our session was about to close, we advised the agent that his proposition came too late, and we have now only to suggest that no payment shall be made in these cases until the fraud alleged shall be inquired into, and should the facts be found to be as complained of, then only the price at which the supplies were bought should be allowed, and the merchants selling them in good faith on the credit of the United States should be protected from the adventurer who has imposed upon them.

A large number of claims were presented for property seized or destroyed, and for depredations of almost every conceivable character, alleged to have been committed by our troops, acting individually or under color of military authority. Conspicuous among them were demands for indemnification on the part of those whose land had been occupied for fortifications, or had been impaired in its value by their erection or proximity. Indemnification, also on a very extravagant scale, was insisted for damages charged to have been sustained by the owners of steamboats while in the government service, and by the proprietors of buildings taken by the United States as barracks or hospitals. Feeling satisfied, for many reasons, that it was not the purpose of the department, in our appointment, to have such claims inquired into, and knowing, indeed, that such investigation, in regard to a large part of them, would be at this time premature and unsatisfactory, the whole were dismissed from our consideration, and our examination confined to liabilities on the part of the government resting not in tort, but in contract, express or implied. It can scarcely be considered a qualification of this declaration to state that in a few cases, in the absence of any express contract, the careless and damaging manner in which the property had been occupied was considered in determining the amount of rent that should be paid.

These claims in tort should not be determined upon until the principles of the responsibility which the government proposes to assume has been defined by legislative action; and the commissioners charged with their investigation should be clothed with judicial power to compel the attendance of witnesses, and should sit at different points, so that as near as possible to the venue of the transaction reliable testimony, both on behalf of the United States and of the claimants, may be obtained without oppressive inconvenience or expenditure. Enough has been disclosed to satisfy us that persistent efforts will be made to exaggerate the conduct of our troops and the value of the property injured, and that unless every possible safeguard is thrown around the subject frauds to the amount of millions may be perpetrated.

Many of the excesses averred to have been perpetrated by the troops along

the line of their march, or in the neighborhood of their encampments, are of a most discreditable character, extending to the robbery of stores and farm-houses; but, being in defiance of law and the orders and known policy of the government, they would seem to form the basis of only a personal responsibility. Such irregularities strikingly illustrate the want of discipline which so unhappily distinguished our army; but as, with few exceptions, these men were doubtless exemplary citizens before they became soldiers, their course may be largely ascribed to that evil example of disregard of law then so habitual and conspicuous in high places. Indeed, these irregularities were but a military mode of effecting what, in the quartermaster's department and elsewhere, was then accomplished through the covert process of contracts and the unarmed instrumentality of "middle men." It affords us high satisfaction to state that, under the vigorous and law-abiding administration of the present commander of this department, these outrages on the homes and property of peaceful and unoffending citizens have well nigh, if not altogether, disappeared.

On the 14th of September, 1861, General Frémont, by telegraphic despatch, authorized Colonel Bussey, of the Third Iowa cavalry, upon his request, to make a contract for the entire equipment of his regiment. No reason has been assigned why this most responsible duty, which the law imposes upon the quartermaster's department, was thus assigned to one who had no peculiar fitness for its discharge, and who might encounter interests and temptations to abuse the trust. Colonel Rankin, the then quartermaster of this regiment, we have had occasion to present in another connexion, as an officer, as distinguished for his efficiency as he is for his integrity, but as these qualities would have stood in the way of the speculators, the commanding general was prevailed on to thrust him aside. Colonel Bussey, accordingly, without having given any notice, or inviting competition, entered into a contract for this purpose with three persons residing at Keokuk, one of whom was his brother-in-law. He did this at Chicago, having gone there with some of these parties and ascertained that the equipments could there be obtained on reasonable terms. A firm of Chicago merchants have deposited before us that they would have sold the equipments to the government at lower rates than they were in fact contracted for by these parties, but as this would have deprived his brother-in-law and friends of the large commission on the purchases, amounting to upwards of \$100,000, which they proposed charging the government, the colonel did not feel justified in permitting it. The bills being before us, and the case so strongly portraying the evils which have grown out of the commanding general virtually superseding in his administration the quartermaster's department and the Ordnance bureau, we concluded to inquire how far our views of the illegality of such a course were sustained by officers of high rank and large experience in the military service. We accordingly summoned Colonel Andrews, whose testimony, given before us under oath, was as follows:

"THURSDAY, March 6.

"*Claims of B. F. Moody & Co., 6300, 6301.*

"Lieutenant Colonel T. P. Andrews, paymaster in the army, called on part of the government, by J. R. Shepley, esq.

"Question by Mr. Shepley. Will you please state what rank you hold; how long you have served in the army; and what is your present post of duty.

"Answer. I hold the rank of lieutenant colonel; have served in the army nearly forty years; am the senior of the two deputy paymaster generals; and I am at present at the head of the pay department in the department of the Missouri.

"Question by Mr. Shepley. Colonel Andrews, I hold in my hand an authority given by General Frémont to Colonel Bussey, of the 3d Iowa cavalry, authorizing him to clothe and equip his regiment. Will you please state whether by law General Frémont had or not the power to give such authority?

"Answer. I suppose at that time that General Frémont had power to authorize Colonel Bussey to raise the regiment, but had no authority to interfere with the fiscal affairs of the regiment, or contracts for the regiment.

"Question by Mr. Shepley. We have before us a variety of orders from General Frémont on different persons to furnish ordnance and ordnance stores. Will you please state whether or not General Frémont has any authority to contract for ordnance and ordnance stores?

"Answer. He had none unless under an express power from the Secretary of War.

"Question by Mr. Shepley. Is there anything in the law or regulations of the army authorizing the commanding general to contract for mules, horses, or forage?

"Answer. I know of none. The quartermaster is the proper person to make these contracts.

"Question by Mr. Shepley. If the commanding general deems fortifications necessary at a particular place, in whom is the authority to contract for their construction?

"Answer. Fortifications have never been, to my knowledge, contracted for, except in St. Louis. The *materials* are contracted for, and the *construction* has always been under the direction of the engineer department proper.

"Question by Mr. Shepley. Do you know any reason, or did you ever hear the late commanding general of this department give any reason, why the rules and regulations of the army were thus disregarded?

"Answer. I was never informed of any, nor was there any obligation on his part to give me the information.

"Question by Mr. Shepley. Did the commanding general ever make to you any remarks showing that he knowingly violated any of the laws and regulations of the War Department?

"Answer. He did on one occasion, in my office, make remarks showing that he intended to disregard the ordinary instructions and regulations of the department at Washington.

"Question by Mr. Shepley. Can you repeat the substance of these remarks?

"Answer. I can. This conversation was late in August or the early part of September. General Frémont came into my office with General McKinstry, and after General McKinstry left, he commenced the conversation without anything calling for it, that I am aware of. He spoke pleasantly, but said, 'THE PEOPLE OF THE UNITED STATES WERE IN THE FIELD; THAT HE WAS AT THEIR HEAD; THAT HE MEANT TO CARRY OUT SUCH MEASURES AS THEY (THE PEOPLE) EXPECTED HIM TO CARRY OUT, WITHOUT REGARD TO THE RED TAPE OF THE WASHINGTON PEOPLE.' My only reply was in a few general words, that as well as I could understand, the term 'red tape' meant system of government, which, in its details, might be carried too far by subordinates, but I had always been of the opinion that our general system was a wise and good one, and that he who undertook to set its principles or general details aside would sooner or later become entangled in difficulties by disregarding all system. He replied by repeating his general remark, (for I think the third time,) '*that the people were in the field, and that he was at their head, and would have everything done according to their expectations from him; saying, now we have only extra constitutional government; no civil rights, so to speak; all ordinary peaceful rules were to be set aside, and all this thing of "red tape" must give way very shortly to what the people required of him.*' I had previously disobeyed General Frémont, by resisting an order of his which I considered unauthorized by law, and concerning which I gave my testimony before the congressional committee. General Frémont had never before been in my office, nor has he been there since. He had no business to transact with me that morning."

The declarations of General Frémont, as deposed to by Colonel Andrews, were of so astounding a character that we felt it to be our duty to inquire if

they had been made to others, with a view of ascertaining how far the annunciation of such revolutionary sentiments might have superinduced the demoralization of the service which our investigations have satisfied us so extensively prevailed in this department. We therefore examined Major Chauncey C. P. Johnson, paymaster in the regular army, and find his statements of sufficient importance to justify us in giving them, unabridged, like those of Colonel Andrews, a place in our report.

Chauncey C. P. Johnson, called by J. R. Shepley, associate counsellor, testified as follows :

"I am paymaster in the United States army ; I was appointed last June, and stationed in the department of the west.

"Question. Did the late commanding general in this department ever in your presence countenance any disregard of law, or the regulations governing the army?

"Answer. General Frémont countenanced it frequently in my presence, and to me, by saying that *he did not intend, in the administration of this department, to be governed by the rules and regulations that were laid down*, and that he would be guided by the circumstances which surrounded him entirely. The reason that this conversation occurred so frequently was that I was thrown much in his company, in my capacity as paymaster and privately. When he first came here I went to see him, having known him before, and was invited by him to come and see him frequently, as I was well acquainted in the west and had been connected with the organization of the home guards, in this city, from the beginning. In regard to the official business which I had to transact with him, several instances occurred in which orders for payments had been issued to Colonel Andrews, paymaster general, and these orders transferred to me, and not being considered by me legal, I called on him in regard to them, and he told me that *he intended to do what he considered best for the service, without reference to law or regulations; that he intended to cut red tape and arrive at the end without reference to order or system, and directed me to pay these orders.*"

The statements of these witnesses—officers of unimpeachable integrity and intelligence—will, we are sure, be heard by the government with equal astonishment and sorrow. General Frémont proclaims, on assuming his command, that "there were no longer any civil rights; that there was no government except that outside of the Constitution, which had been suspended; that it was his determination to administer his department without reference to law or regulations; that the people of the United States were in the field, and that he was at their head, and that he meant to carry out such measures as they, the people, expected him to carry out, 'without regard to the red tape' of the Washington people"—that is the President and Congress. It is singular how perfectly these sentiments harmonize with those held by the usurpers, who in this and other ages of the world have sought and established absolute power upon the ruins of public liberty. Some of these usurpers, taking yet higher ground than that assumed in the interview with Colonel Andrews, have claimed for themselves a mission to "carry out" the will of God, but none of them have sunk their pretensions below a special mission to "carry out" the will of the people. Cæsar, when he stood upon the banks of the Rubicon and waved to his veterans to advance, did not make a bolder declaration against his country than this. The words, so earnestly and so often spoken, announced a revolution conceived, but which, happily, most happily for the country, the parent had not the strength to bring forth. No man has lived in the tide of times wise and pure enough to be intrusted with such a power as is here claimed. Military chieftains who cut "red tape" always do it with their swords, and history proves that the throat of their country suffers quite as much as does the "tape" in the operation. As free institutions have their foundations in law, and in the obedience

of the people and their representatives, civil and military, to it, this expression of a purpose to cast aside all political and constitutional restraints, made in the halls of legislation even, would alarm, but when made in the field by a chieftain, at the head of a great army, it chills and awes the patriot's heart by its parricidal spirit. It reveals an unscrupulous ambition, which awaits but the prestige and power of victory to sweep the government itself, as a cobweb, from its path.

This sad page in the history of the late commander of this department gathers a deep shadow from the circumstances under which these declarations were made. General Frémont had, a few weeks before, taken and subscribed the following military oath: "*I, John C. Frémont, do solemnly swear that I will bear true faith and allegiance to the United States, and that I will serve them honestly and faithfully against their enemies or opposers whomsoever; and that I will observe and obey the orders of the President of the United States, and the orders of the officers over me, according to the rules and articles of war.*" He thus, in sight of God and his country, had plighted faith with his government that he would bear to it "true allegiance," and he stood pledged by the most solemn of human sanctions to support that Constitution which, when "the people are in the field," places at "their head" the President of the United States, and not any general holding a commission under him. With a confiding fondness he had been summoned from the obscurity of private life, and, preferred above the veterans and a whole army of patriots, he was made a major general. Scarcely has he girded on his sword, to whose honor the best interests of the nation had been committed, when he says to his subordinates and followers that he draws it, not in the name of law or of the government, but in defiance of both, to enforce such measures as, in his judgment, "the people expected him to carry out." These words were spoken, as it were, in the very sick chamber of the republic, and had the tone of the undertaker while the patient was yet struggling for life. They were uttered against the government of a country, not then tranquil and strong and able to battle with all assailants, but of a country distracted and humbled, and bleeding under the stabs of traitors. They came from no flush of excitement springing from a triumph of arms, but were the solemn and oft-repeated enunciations of a general just entering the field of his future operations, and surveying for the first time the strength of his gathering army. They were addressed to officers of high rank in the service, and were intended to impress them with obedience to his revolutionary programme. General Frémont already held the sword, and it was most important for his purposes that Colonel Andrews, the head of the pay department here, and Major Johnson, a paymaster under him, should not interfere with his free use of the national purse. In respecting his own official oath and the law, by resisting unwarrantable transfers of public money, the colonel had already given offence, and he was therefore visited and thus startlingly warned, that he might not offend again. His noble and patriotic reply, though subdued by the presence of his superior officer, proved him to be worthy of the sword he wore, and that his courage and loyalty had nothing to fear from the menaces by which he was assailed.

The line of policy thus resolved on was openly pursued as his apparent consciousness that he was "the State" grew more and more vigorous. He created a large number of offices and filled them with friends and favorites, to whom he assigned full salaries, a power which he had no more right to exercise than had any soldier in his ranks. About two hundred of these appointments were made, and of which some forty-two were allotted to a body of but three hundred men, which he had recruited and organized under the somewhat regal designation of "The Frémont Body Guard." Imitating yet further imperial rule, he sought to bestow upon many—possibly all his appointees—whatever their duties, a

military prestige. Thus, Castle, his "superintendent of railroad transportation," was honored, by his letter of appointment, with "the pay of a colonel"—and the title, of course, followed—while the office of "musical director," a creation of his own, was filled by a musician from one of the theatres, to whom was given the rank and pay of a captain of engineers in the regular army.

When the Secretary of War visited this department in person and inspected the forts which General Frémont was then building for the defence of St. Louis, under the auspices of Beard, he at once decided that they were useless, and ordered that they should be discontinued, and that the funds of the government in the hands of the paymasters and quartermasters here should be applied exclusively to meet the current expenses of the army. Yet, in defiance of the Secretary's authority, the work upon the forts went on to their completion, while \$20,000 of the funds thus sought to be protected by the Secretary was paid to Beard on the 15th October; and on the 19th of the same month an imperative order was given by the general for the payment to him of \$60,000 more. In his administration he virtually ignored the existence of the quartermaster's and the commissary's departments, and of the Ordnance bureau, and necessarily that of the government at Washington. The most stupendous contracts, involving an almost unprecedented waste of the public money, were given out by him in person to favorites, over the heads of the competent and honest officers appointed by law. It seemed to be his purpose to present himself as the embodiment of political and military power, and to show alike by his words and his conduct how little he depended upon the government of his country, and how utterly he disregarded its laws, its regulations and its policy. Of course, such an example could not be otherwise than contagious. The whole framework of the political and military systems, as organized by law, was unbraced, and disorder and criminal insubordination everywhere prevailed. There could be no obedience when the general of the department openly taught and practiced resistance to the laws as a right, if not a duty. There could be no economy where the general exposed himself continually to imputations of laboring in his great office to feed the greed of his followers for gain. He occupied with his family and several members of his staff a marble palace, and lived amid its luxurious furniture and glittering wares at a stipulated expense of \$6,000 per annum to the government, at a time when the homes of millions of our people were darkened by the horrors of civil war. Could it be expected that his subordinates would display any special sympathy with our national sufferings, or any marked solicitude to guard the public treasury from plunder? Instead of going to Cairo, as he could have done for a few dollars, on one of the vessels transporting his troops which accompanied him, he chartered a magnificent steamer, at a cost of \$1,600 to the government, to convey himself and cortege alone. This steamer was anchored out in the stream, instead of lying at the wharf, as all others did and do, and when the general drove in his carriage and four to the water's edge yet another steamer, at still further cost to the government, as we learn from claim presented for it, was employed to put himself and suite on board. A foreign prince or potentate, in a season of national mourning, might thus live, and thus enter his pleasure yacht or his barge of state, but insensibility amid the calamities of civil war, and wastefulness when the public debt is being increased at the rate of from one to two millions daily, when exhibited by a general of the American army, is a spectacle from which the patriot may well turn away in grief and humiliation.

As was to have been expected, the influence of such an exhibition was everywhere felt. High officers did not, it was true, dare charter steamers for their own convenience, but they did, heedless of the expenditure, engage special trains for the convenience of themselves and attendants, while yet humbler officers, dwarfing their pseudo pomp to the narrower sphere of their authority hired at the livery stables for months buggies and horses at the cost of the

government, and this although the law only recognized them on foot, or as mounted at their own expense. Thus, in every way, and almost everywhere, under the malign influence of the declaration that neither laws nor regulations longer prevailed, there was manifested a disposition to convert the national tragedy through which we are passing into a saturnalia of personal and official self-indulgence and extravagance.

Having, in the fulfilment of the trust committed to us, lifted the veil from a field of prodigality, insubordination, and demoralization, in the midst of which we have been toiling for the last four months, we have felt it incumbent upon us to point the department to the true causes of these disorders. We have presented the testimony of Colonel Andrews and Major Johnson, not for the purposes of animadversion, but simply to explain the scene which we have bared to view. In the light of this explanation, we are happy to believe that the disease, in the virulence with which it has prevailed here, was not national, but local, and was the result of local and personal causes.

So soon as we had been sufficiently familiar with the facts presented and with the principles applicable to them to enable us to feel entire confidence in the conclusions arrived at, we began to deliver vouchers, certified in accordance with the instructions of the Secretary of War. The first delivery occurred on the 9th day of January, 1862, and has been since regularly continued, as our decisions have been pronounced. In giving out the claims presented, with the allowances upon them, it was necessary that some receipt should be executed by the claimants. In deciding what should be the character of that receipt, it seemed to us that as a protracted and patient examination had been given to these claims, and the parties had been heard either in person or by attorney, and the cases had been continued from day to day, so long as those interested desired to produce testimony, and the government, by our action, was committed to pay the amount allowed, it was no more than proper that the claimants should be required to accept the allowance in full for the amount demanded. This course was adopted, and was generally acquiesced in. Prominent among those who remonstrated was Leonidas Haskell, whose transactions figure in this report, and who gave to us formal notice of his intention to appeal to Congress from our decisions on his claims.

The department is aware how constantly we have in our correspondence urged the payment of these liabilities. Those for money seized and borrowed from the banks, with the exception probably of some \$200,000, have been satisfied, and a number of the holders of the smaller class of vouchers have been so fortunate as to have their claims settled by the disbursing officers; but probably fully three-fourths of the amount allowed by the commissioners still remains unpaid. When it is borne in mind how long many of these debts have been due, and how much from these delays the vouchers have depreciated in the hands of the holders, many of whom have been obliged to cash them in the market at a heavy discount, it is not a matter of surprise that an irritating sense of injustice on the part of the government is beginning to be felt here. This feeling is increased by a prevailing impression that the same tardiness of payment has not distinguished the service in the east. We earnestly recommend, as a measure of common justice, due alike to the highest pecuniary interests of the government as to its honor, that the claims which we have certified shall be at once paid.

While we have necessarily devoted the principal part of our report to an exposure of the abuses which characterized the late administration of this department, we cannot close it without bearing testimony to the integrity which has generally been displayed by merchants, mechanics, and manufacturers when permitted to deal directly with the government. Wide spread as has been the demoralization in official circles and among their dependents and favorites, and startling as are the frauds which have been attempted and consummated, a large

majority of the claimants have presented themselves before us unimpeached by imputations either upon their loyalty or honor.

We have examined some 1,200 witnesses, whose testimony has been taken by an accomplished stenographer, (Mr. R. R. Hitt, of Chicago,) and has been in part written out. The illness from which he is at this moment suffering may delay the completion of the work, but we presume that in some three months the whole evidence, which will consist of from six to seven thousand manuscript pages, will be ready, and will then be filed in the department as part and in support of this report. As several weeks will be required to close entirely the business of the commission, the secretary and a few of the clerks now in its service will be necessarily retained during that time. The entire record of our proceedings, with the accompanying papers, will then be transmitted.

DAVID DAVIS.

J. HOLT.

HUGH CAMPBELL.

EXHIBIT A.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,

St. Louis, December 14, 1861.

GENERAL: I have the honor to submit to you the accounts for disbursements made by Major Franz Kappner for labor and materials used in the construction of forts Nos. 1, 2, 3, 4, and 5, the military hospital and bake-house, the barracks and stables, &c., all constructed in and about this city, by order of Major General J. C. Frémont, late in command of the western department. After a careful examination of these accounts, I am satisfied that the prices of labor and materials are reasonable and just, though the entire cost of the works is considerably more than I could build them for myself.

The total cost of the five forts, as charged, is \$61,342 50 $\frac{3}{4}$, of which \$45,762 85 $\frac{3}{4}$ remains unpaid; and of the total cost, \$51,123 22 $\frac{1}{2}$, of the hospital, barracks, stables, wash-house, bakery, guard-house, storeroom, &c., the sum of \$49,192 85 is yet due.

The whole unpaid balance of \$94,955 70 $\frac{3}{4}$ is due chiefly to poor laborers who are in great need of their pay, I therefore trust that some disposition will quickly be made for the liquidation of these claims.

Very respectfully, your most obedient,

GEO. W. CULLUM,

Brigadier General and Chief of Engineers.

Major General H. W. HALLECK,

U. S. Army, Commanding Department of the Missouri.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,

St. Louis, Mo., January 21, 1862.

SIR: I enclose, herewith, estimates of materials and labor on batteries A, B, C, D, E, and F, and forts 6, 7, 8, 9, and 10, constructed under a contract, dated September 25, 1861, with E. L. Beard, for the defence of the city of St. Louis, by order of Major General J. C. Frémont. The first estimate, amounting to \$59,456 27, is calculated according to the customary prices paid in the city of St. Louis under ordinary circumstances, furnished chiefly by Truman J. Homer, city engineer; and the second estimate, amounting to \$298,326 78, is based upon the prices stipulated in Beard's contract.

The contract provides for gravel pavements, for which cinders have been substituted.

Most of the cisterns already leak and require repairs, but whether the fault is the contractor's I cannot say.

Nothing is estimated for roofing the buildings, as the contract made was not complied with.

Since these works were completed I have carefully inspected them, and find the general character of the work inferior to forts 1, 2, 3, 4, and 5, built by hired labor.

Very respectfully, your most obedient,

GEO. W. CULLUM,

Brigadier General of Vols., U. S. A., Chief of Staff, and Engineer.

J. S. FULLERTON, Esq.,

Secretary of Board of Com. on Claims, St. Louis, Mo.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,

St. Louis, December 24, 1861.

SIR: I transmit, herewith, accounts for disbursements made by Major Franz Kappner, for labor and materials used in the construction of forts Nos. 1, 2, 3, 4, and 5, the military hospital and bake-house, the barracks and stables, &c., all constructed in and about the city of St. Louis, under the orders of Major General J. C. Frémont, late in command of the western department.

Accompanying the accounts is the report of Brigadier General Cullum, chief engineer of this department, giving his views, after a careful examination, of the charges for labor and materials.

If these accounts come within the jurisdiction of the commission, I would respectfully request that they be examined as early as convenient, as numerous families are dependent upon the pay of the workmen.

Please acknowledge the receipt of the accounts.

By order of Major General Halleck.

GEO. W. CULLUM,

Brigadier General, Chief of Staff, and Engineer.

J. S. FULLERTON, Esq.,

Secretary of Commission on Claims, St. Louis, Mo.

Value of materials and labor on forts and batteries constructed under a contract with E. L. Beard.

Works.	Estimated value according to customary prices paid in the city of St. Louis under ordinary circumstances.		Cost according to prices stipulated in his contract.	
	Rate.	Price.	Rate.	Price.
<i>Battery A.</i>				
Excavation, 4,200 cubic yards ..	\$0 15	\$63 00	\$0 45	\$189 00
Embankment, 446½ cubic yards.	15	66 98	55	245 57
Embankment puddled, 446½ cub. yards.....	20	89 30	90	401 85
Sodding, 1,050 square yards....	15	157 50	1 50	1,575 00
Lumber per M., 2,601 feet.....	30 00	78 03	100 00	260 10
		454 81		2,671 52
<i>Battery B.</i>				
Excavation, 1,247½ cubic yards..	15	\$187 16	45	\$561 48
Embankment, 1,362 cubic yards.	15	204 30	55	749 10
Embankment puddled, 1,212½ cubic yards	20	242 46	90	1,091 10
Sodding, 3,418½ square yards....	15	512 80	1 50	5,127 99
Lumber per M., 2,770 feet.....	30 00	83 00	100 00	277 00
		1,229 72		7,806 67
<i>Battery C.</i>				
Excavation, 811½ cubic yards... ..	15	\$121 66	45	\$364 98
Embankment, 857½ cubic yards.	15	128 65	55	471 71
Embankment puddled, 857½ cub. yards.....	20	171 54	90	771 89
Sodding, 2,416 square yards	15	362 45	1 50	3,624 49
Paving with cinders, 80 square yards.....	15	12 00	1 00	80 00
Lumber per M., 1,941 feet.....	30 00	58 23	100 00	194 10
		854 53		5,507 17
<i>Battery D.</i>				
Excavation, 1,175 cubic yards ..	15	\$176 25	45	\$528 75
Embankment, 1,303½ cubic yards.	15	195 50	55	716 83
Embankment puddled, 1,275½ cubic yards	20	255 07	90	1,147 95
Sodding, 3,632 square yards....	15	544 80	1 50	5,448 00
Paving with cinders, 150 square yards.....	15	22 50	1 00	150 00
Lumber per M., 2,527 feet.....	30 00	75 81	100 00	252 70
		1,269 93		8,244 23

Value of materials and labor on forts and batteries, &c.—Continued.

Works.	Estimated value according to customary prices paid in the city of St. Louis under ordinary circumstances.		Cost according to prices stipulated in his contract.	
	Rate.	Price.	Rate.	Price.
<i>Battery E.</i>				
Excavation, 474 cubic yards....	\$0 15	\$71 10	\$0 45	\$213 30
Embankment, 541 cubic yards..	15	81 15	55	297 55
Embankment puddled, 541 cub. yards.....	20	108 20	90	486 90
Sodding, 1,795 square yards....	15	269 25	1 50	2,692 50
Paving with cinders, 20½ square yards.....	15	3 05	1 00	20 33
Lumber per M, 3,060 feet.....	30 00	91 80	100 00	306 00
		624 55		4,016 58
<i>Battery F</i>				
Excavation, 416½ cubic yards..	15	62 47	45	187 41
Embankment, 524½ cubic yards.	15	78 65	55	288 38
Embankment puddled, 493½ cub. yards.....	20	98 64	90	443 90
Sodding, 1,151 square yards....	15	172 65	1 50	1,726 50
Lumber per M., 2,728 feet.....	30 00	81 84	100 00	272 80
		494 25		2,918 99
<i>Fort No. 6.</i>				
Excavation, 8,174 cubic yards..	15	1,226 10	45	3,678 30
Embankment, 9,643 cubic yards.	15	1,447 20	55	6,306 40
Embankment puddled, 7,798 cubic yards.....	20	1,559 60	90	7,018 20
Sodding, 17,029 square yards....	15	2,554 35	1 50	25,543 50
Paving with cinders, 2,602 square yards.....	15	390 30	1 00	2,602 00
Lumber, 179,699 feet.....	30 00	5,390 97	100 00	17,969 90
One cistern, 9,984 gallons.....	5	499 20	25	2,496 00
Fascines, 223 ps., 2,919 cubic feet.....	20	583 80	1 00	2,919 00
		13,651 52		67,533 30
<i>Fort No. 7.</i>				
Excavation, 5,871 cubic yards..	15	880 65	45	2,641 95
Embankment, 6,362 cub'c yards.	15	954 30	55	3,499 10
Embankment puddled, 5,012 cubic yards.....	20	1,002 40	90	4,510 80
Sodding, 12,757 square yards....	15	1,913 55	1 50	19,135 50
Paving with cinders, 1,204 square yards.....	15	180 60	1 00	1,204 00
Lumber, 106,498 feet.....	30 00	3,194 94	100 00	10,649 80
One cistern, 11,746 gallons.....	5	587 30	25	2,936 50
Fascines, 107 ps., 1,400 cubic feet.....	20	280 13	1 00	1,400 63
		8,993 87		45,978 28

Value of materials and labor on forts and batteries, &c.—Continued.

Works.	Estimated value according to customary prices paid in the city of St. Louis under ordinary circumstances.		Cost according to prices stipulated in his contract.	
	Rate.	Price.	Rate.	Price.
<i>Fort No. 8.</i>				
Excavation, 5,779 cubic yards..	\$0 15	\$866 85	\$0 45	\$2,600 55
Embankment, 6,508 cubic yards.	15	976 20	55	3,579 40
Embankment puddled, 5,261 cubic yards	20	1,052 20	90	4,734 90
Sodding, 13,533 square yards...	15	2,032 95	1 50	20,329 50
Paving with cinders, 1,678 square yards	15	503 40	1 00	1,678 00
Lumber, 176,427 feet	30 00	5,292 87	100 00	17,642 70
Two cisterns, 23,492 gallons ..	5	1,174 60	25	5,873 00
277½ fascines, 3,632 ¹⁷ / ₁₀₀ cubic feet	20	726 50	1 00	3,632 47
		12,625 57		60,070 52
<i>Fort No. 9.</i>				
Excavation, 6,988 cubic yards..	15	1,048 20	45	3,144 60
Embankment, 7,577 cubic yards.	15	1,136 55	55	4,164 35
Embankment puddled, 5,837 cubic yards	20	1,167 40	90	5,253 30
Sodding, 17,340 square yards...	15	2,601 00	1 50	26,010 00
Paving with cinders, 2,911 square yards	15	436 00	1 00	2,911 00
Lumber, 195,785½ feet	30 00	5,873 57	100 00	19,578 55
One cistern, 11,746 gallons	5	587 30	25	2,936 50
Fascines, 287½ ps., 3,763 ³⁷ / ₁₀₀ cubic feet	20	752 67	1 00	3,763 37
Gabions, 93 ps., 1,231 ²⁷ / ₁₀₀ cubic feet	20	246 24	1 00	1,231 27
		13,848 93		68,992 94
<i>Fort No. 10.</i>				
Excavation, 1,340 cubic yards ..	15	201 00	45	603 00
Embankment, 1,477 cubic yards.	15	221 55	55	812 35
Embankment puddled, 1,357 cubic yards	20	271 40	90	1,221 60
Sodding, 4,431 square yards....	15	664 65	1 50	6,646 50
Paving with cinders, 975 square yards	15	146 25	1 00	975 00
Lumber, 41,022 feet	30 00	1,230 66	100 00	4,102 20
One cistern, 11,746 gallons	5	587 30	25	2,936 50
Fascines, 71 ps., 929 ²⁹ / ₁₀₀ cubic feet	20	185 87	1 00	929 39
		3,508 68		18,226 54

Value of materials and labor on forts and batteries, &c.—Continued.

RECAPITULATION.

Works.	Estimated value according to customary prices paid in the city of St. Louis under ordinary circumstances.		Cost according to prices stipulated in his contract.	
	Rate.	Price.	Rate.	Price.
Excavation, 32,755½ cubic yards	\$0 15	\$4,913 30	\$0 45	\$14,739 90
Embankment, 36,607 cubic yards	15	5,491 05	55	20,133 85
Embankment puddled, 30,091 cubic yards	20	6,018 20	90	27,081 90
Sodding, 78,573 square yards...	15	11,785 95	1 50	117,859 50
Paving with cinders, 9,620½ square yards	15	1,443 05	1 00	9,620 33
Lumber, 715,058 feet, board measure	30 00	21,451 74	100 00	71,505 80
Cisterns, 68,714 gallons.....	05	3,435 70	25	17,178 50
Fascines, 12,644.88 cubic feet ..	20	2,528 97	1 00	12,644 86
Gabions, 1,231.37 cubic feet....	20	246 24	1 00	1,231 27
		57,314 20		291,995 91
<i>Add—</i>				
Fascines for forts Nos. 1, 2, and 5, 5,236 cubic feet.....	20	1,047 20	-----	5,236 00
Bills for drains	-----	142 00	-----	142 00
Bills for iron work	-----	802 87	-----	802 87
Five flag staffs	-----	150 00	-----	150 00
Grand total	-----	59,456 27	-----	298,326 78
				59,456 27
Difference	-----	-----	-----	238,870 51

MILITARY PROTECTION TO THE BALTIMORE AND OHIO
RAILROAD.

LETTER

FROM

THE SECRETARY OF WAR,

IN ANSWER TO

*A resolution of the House of January 22, 1862, relative to military protection
to the Baltimore and Ohio railroad.*

APRIL 3, 1862.—Laid on the table, and ordered to be printed.

WAR DEPARTMENT,

Washington City, D. C., March 27, 1862.

SIR: In compliance with the resolution of the House of Representatives of January 22, 1862, requesting to be informed "whether, and in what time, sufficient military protection can be extended to the line of the Baltimore and Ohio railroad to enable the company to repair and work said road," I have the honor to transmit herewith a copy of the report of Major General George B. McClellan, commanding the army of the Potomac.

Very respectfully, your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

HEADQUARTERS ARMY OF THE POTOMAC,
Near Alexandria Seminary, Virginia, March 22, 1862.

The necessary protection has been afforded to the Baltimore and Ohio Railway Company, which is now engaged in repairing the line, with the prospect, as I understand, of having it very soon in running order, if not already in operation.

GEO. B. MCCLELLAN,
Major General Commanding.

SIGNAL SUPPLIES.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Estimates for signal supplies, &c.

APRIL 4, 1862.—Referred to the Committee of Ways and Means, and ordered to be printed.

WAR DEPARTMENT,
Washington City, D. C., April 2, 1862.

SIR: I have the honor to submit the accompanying communications and estimates by Major Myer, signal officer of the United States, and request that you would communicate the same to the House of Representatives, that an appropriation may be made as requested.

Your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. GALUSHA A. GROW,
Speaker of the House of Representatives.

OFFICE OF THE SIGNAL OFFICER, ARMY OF THE POTOMAC,
Washington, March 30, 1862.

SIR: I respectfully request that the accompanying estimates be submitted for the action of Congress.

I am, sir, very respectfully, your obedient servant,

ALBERT J. MYER,
Signal Officer United States Army.

Hon. EDWIN M. STANTON,
Secretary of War, Washington, D. C.

OFFICE OF THE SIGNAL OFFICER, ARMY OF THE POTOMAC,
Washington, March 27, 1862.

SIR: The estimates submitted with the bill laid before the Secretary of War and the Senate and House committees makes provision only for the first purchase of the signal supplies, and has no sufficient provision for the year to elapse from June 30, 1862.

To provide for this period the following sums will be necessary :
 For signal supplies for the army of the United States for the year
 ending June 30, 1863.....

\$39,500
 2,950

For incidental expenses

42,450

As follows, say:

500 sets signal apparatus, at \$30.....	15,000
Telescopes.....	7,000
Marine glasses.....	7,500
Miscellaneous supplies—turpentine, wicking, signal cartridges, pouches, cans, &c.....	10,000
Contingent expenses.....	2,950
	42,450

I respectfully request that these estimates may be approved by the proper officers and submitted to Congress. They are made upon the supposition that the army is to be of five hundred (500) regiments, and are intended to supply each regiment with lights, at night, to prevent firing upon each other, in addition to the general use in the army of the field signals for telegraphic purposes, as employed with the expedition under General Sherman, and in the battle at Port Royal ferry; the expedition to Fernandina; and the battles at Roanoke island and Newbern; with General Banks's force during the summer, and elsewhere.

As the military committee of the House of Representatives has given more thorough attention to this subject than other committees, I would suggest that, if it be proper so to do, the estimates should be sent to them.

I am, sir, very respectfully, your obedient servant,

ALBERT J. MYER,
Signal Officer, Major U. S. A.

Hon. E. M. STANTON,
Secretary of War, Washington, D. C.

OFFICE OF THE SIGNAL OFFICER, ARMY OF THE POTOMAC,
Washington, March 27, 1862.

SIR: In reference to the enclosed communication, I would respectfully bring to the notice of the general-in-chief and of the War Department the estimates which I considered it my duty, under the law by which I hold my commission to submit, in June 26, 1861, to the then Secretary of War, for ten thousand (10,000) dollars for movable electric telegraphs; August 23, 1861, when I proposed that four flying field telegraphs accompany the army of the Potomac; September 23, 1861, when permission was asked to expend five thousand (5,000) dollars for this purpose; and on November 30, 1861, when submitting my annual report to the Secretary of War, I therewith made an estimate of thirty thousand (30,000) dollars to be expended under my direction.

Though the general outline of my plan has, I believe, met the approval of the general commanding, I have never been explicitly empowered or supplied with the means to develop it.

I have never doubted that flying telegraphs (movable telegraphs) could be made strong, durable, reliable, and in a manner to save expense to the United States, and to be of value for the military service.

I am now informed that the military committee of the House of Representatives

have seen and have approved the instruments, &c., it is proposed to use, and that a disposition exists to thoroughly try them.

The want of such telegraphs is now felt in the army. There are none complete in the service.

I have, therefore, to submit, for the action of the general commanding and the Secretary of War, the following estimate for sums to be expended under the direction of the signal officer, viz :

For the manufacture or purchase of apparatus and equipments for movable electric telegraphs to be used with the army in the field, thirty-nine thousand three hundred and twelve dollars and fifty cents, (39,312 50.)

The cost of the first flying telegraph I estimate as follows :

For ten (10) miles insulated wire, at \$2 50.....	\$2,250 00
A double reel carriage for carrying and paying out this wire, say	500 00
Two (2) telegraphic instruments showing the letters of the alphabet, at \$100.....	200 00
Batteries or electric magnetic generators.....	200 00
	<hr/>
	3,150 00
To provide for contingencies and alterations, say 25 per cent....	787 25
	<hr/>
	3,937 25
	<hr/> <hr/>

This estimate I consider as allowing fully fifty (50) per cent. for experiment and alterations in making the first apparatus, which should be a model for the others.

In my opinion the average cost of each apparatus, carrying ten (10) miles of wire capable of being laid down at the rate of a slow walk, and to be worked by any intelligent person who can read, ought not to exceed from fifteen hundred to two thousand dollars.

I am, sir, very respectfully, your obedient servant,

ALBERT J. MYER,

Signal Officer, United States Army.

HON. E. M. STANTON,

Secretary of War, Washington, D. C.

INDIAN DEPARTMENT PROPERTY IN UTAH TERRITORY.

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

IN ANSWER TO

Resolution of the House of 24th March, furnishing the evidence called for in relation to Indian department property in Utah Territory.

APRIL 4, 1862.—Laid on the table, and ordered to be printed.

DEPARTMENT OF THE INTERIOR, *April 3, 1862.*

SIR: Agreeably to the request of the resolution of the House of Representatives of the 24th ultimo, I have the honor to transmit, herewith, the papers therein referred to, which furnish the evidence and information called for respecting Indian department property in Utah Territory, accompanied by the report of the Commissioner of Indian Affairs in relation to such property as was returned by Brigham Young and Jacob Forney, while acting as superintendents of Indian affairs in said Territory.

Very respectfully, your obedient servant,

CALEB B. SMITH,
Secretary of the Interior.

Hon. G. A. GROW,
Speaker of the House of Representatives.

DEPARTMENT OF THE INTERIOR,
Office of Indian Affairs, April 1, 1862.

SIR: In answer to the resolution of the House of Representatives of the 24th ultimo, requesting you to furnish certain evidence and information respecting the Indian department property in Utah Territory, referred to this office on the 25th ultimo, I have the honor to state that while, in compliance with the request of the resolution named, I send all the property accounts (copies) filed by Brigham Young, late governor and *ex officio* superintendent of Indian affairs in Utah, such accounts will furnish information relative to but a small portion of the property purchased by that officer, as it will be observed, on examination of his

money accounts, (copies of which are filed in the House of Representatives,) that it was his practice to make purchases at times when the articles were required for immediate distribution, and to furnish certificates of such distributions on the vouchers for the purchases, consequently such articles do not appear on his property returns.

The papers now transmitted to you as connected with the accounts of Governor Young are as follows, viz, (copies:)

Returns of property of superintendency and blacksmith shop, for the quarter ending December 31, 1856.

Returns of property of superintendency and blacksmith shop, 1st quarter, 1857.

Returns of property of superintendency and blacksmith shop, 2d quarter, 1857.

Returns of property of superintendency, 3d quarter, 1857.

Returns of property of superintendency, 4th quarter, 1857.

Returns of property of superintendency, 1st quarter, 1858.

I also transmit herewith the money and property accounts (copies) of Governor Young, as superintendent, &c., for the 2d quarter of 1858, copies of which, late Superintendent Davies alleges, were not forwarded to him with the others, for investigation. These accounts are comprised in the following papers, viz: Account current; abstract of disbursements, with 17 vouchers; and property returns.

As called for by the resolution, the property returns of J. Forney, successor to Governor Young, as superintendent, &c., has been withdrawn from the Second Auditor's office, and a copy thereof transmitted with the papers already described. It contains a receipt for all the property that Forney appears to have received from Governor Young.

Very respectfully, your obedient servant,

WM. P. DOLE, *Commissioner*.

Hon. CALEB B. SMITH, *Secretary of the Interior*.

UTAH SUPERINTENDENCY.

Return of property purchased by Brigham Young, governor, and ex officio superintendent of Indian affairs, quarter ending December 31, 1866.

Date.	From whom received, and to whom issued.	Black ink, bottles of.	Blotting paper, quires of.	Candles, pounds of.	Envelopes, large, packages of.	Envelopes, small, packages of.	Footcaps, teams of.	Letter, reams of.	Paper weights, large, No. of.	Paper weights, small, No. of.	Pins, packages of.	Bed ink, bottles of.	Stoves, No. of.	Sealing wax, packages of.	Wafer, boxes of.	Wood, cords of.	Matches, boxes of.	Coal, bushels.	Borax, pounds.	Filles, assorted, dozens.	Cast-steel, pounds.	Iron, pounds.	Anvils.	Bellows.	Vise, large.	Hammers, sledge.	Hammers, small.	Tongs.	Hand vices.	Brace and bits, sets.	Drill and stocks, sets.	Heading tools.	Punches, sets.	Shoeing tools, sets.	Stock dies and screw plate, sets.	
1866.																																				
Sep. 30	Amount on hand.....	23½	40	2	5	½	1	1	1	1	1	1	1	1	17½	18	470½	10½	47½	1300																
April 13	Received from Gilbert and Gerrish.....																																			
	Total purchased.....	23½	40	2	5	½	1	1	1	1	1	1	1	1	17½	18	470½	10½	47½	1200																
Nov. 17	Issued to superintendent's office.....	1	20	1	3	½									1	4	8																			
	Issued to B. F. Pendleton, U.S. blacksm'n.																																			
Dec. 31	Amount on hand	11½	20	1	2										3½	10	100	2	4		500															

I certify on honor that the above return is correct.

BRIGHAM YOUNG,
[Governor, and ex officio Superintendent of Indian Affairs, U. T.

Statement of work done by B. F. Pendleton, Indian blacksmith, for the following bands of Indians from December 31, 1857, to March 31, 1858.

KANOSH AND BAND.

Shoeing 10 ponies, at \$3; repairing 7 bits, at 50 cents.....	\$33 50	
Repairing guns, \$17 50; repairing traps, \$5.....	22 50	
		<hr/> \$56 00

SHOWAN'S BAND.

Repairing guns, \$20 25; repairing bits, \$4.....	24 25	
Stocking 6 rifles, at \$6; re-rifling 3 rifles, at \$1.....	39 00	
Fire steels, \$2 60; repairing traps, \$7.....	9 60	
Fish spears, \$12; shoeing 12 ponies, at \$3.....	48 00	
		<hr/> 120 85

ARROPEEN AND BAND.

Shoeing 7 ponies, at \$3; repairing guns, \$9.....	30 00	
Arrow points, \$7; repairing 6 bits, at 50 cents.....	10 00	
Making spears, \$5; making traps, \$8.....	13 00	
Stocking 2 rifles, at \$6; repairing hatchets, \$3.....	15 00	
Fire steels.....	3 00	
		<hr/> 71 00

WAH-NOO-NEE AND BAND.

Repairing bridle bits, \$4; shoeing 5 ponies, at \$3.....	19 00	
Repairing guns, \$15; arrow points, \$5.....	20 00	
Fire steels, \$2 50; repairing traps, \$5.....	7 50	
		<hr/> 46 50

QUEE-TUP AND BAND.

Repairing bits, \$4 50; shoeing 3 ponies, at \$3.....	13 50	
Arrow points, \$5; repairing guns, \$16.....	21 00	
Fire steels, \$2 50; repairing traps, \$5 25.....	7 75	
		<hr/> 42 25

POWDER-WICH AND BAND.

Shoeing 9 ponies, \$3; repairing bits, \$3 50.....	30 50	
Arrow points, \$7; repairing guns, \$8.....	15 00	
Fire steels, \$3; repairing and making traps, \$10.....	13 00	
Stocking 4 rifles, at \$6; spears, \$6.....	30 00	
		<hr/> 108 50

TABBY AND BAND.

Arrow points, \$4; repairing rifles, \$6.....	10 00	
Fire steels, \$2; repairing traps, \$5 60.....	7 60	
Shoeing 4 ponies, \$3; stocking 2 rifles, at \$6.....	15 00	
		<hr/> 32 60

Carried forward..... 477 70

Statement of work done by B. F. Pendleton, &c.—Continued.

Brought forward..... \$477 70

DICK AND BAND.

Stocking 3 rifles, at \$6; repairing guns, \$8.....	\$26 00	
Fire steels, \$2 50; repairing traps, \$3; spears, \$4.....	9 50	
Shoeing 5 ponies, at \$3; repairing hatchets, \$4.....	19 00	
Repairing bridle, bridle bits, \$3.....	3 00	
		<hr/> 57 70

GREEN JACKET AND BAND.

Shoeing 6 ponies, at \$3; repairing guns, \$7.....	25 00	
Fire steels, \$2; repairing traps, \$3 50; repairing bits, \$3...	8 50	
Stocking 4 rifles, at \$6; spears, \$4 50; arrow points, \$4 25	32 75	
		<hr/> 66 25
		<hr/> 601 45

I certify on honor that the foregoing statement is correct and just, and that I have actually done the work and used the materials for the benefit of the Indians herein specified.

BENJAMIN F. PENDLETON.

Blacksmith for the Indians in Utah Territory.

INDIAN DEPARTMENT PROPERTY IN UTAH.

UTAH SUPERINTENDENCY.

Return of property purchased and issued by Brigham Young, governor and ex officio superintendent of Indian affairs, in the quarter ending March 31, 1857.

Date.	From whom received, and to whom issued.	Number of vouchers.	Anvils, number of.	Bellows, number of.	Borax, pounds of.	Brace and bits, sets of.	Drill stocks, sets of.	Coal, bushels of.	Piles, dozens of.	Heading tools, number of.	Hammers, sledge, number of.	Hammers, small, number of.	Hand vices, number of.	Iron, pounds of.	Punches, number of sets	Shoeing tools, number of sets.	Stock dies and screw plate, sets.	Tongs, number of.	Vices, large, number of.	Black ink, bottles of.	Blank vouchers, number of.	Blank abstracts, number of.	Blank account current.	Blank returned property, No. of.	Blotting paper, quires of.	Candles, pounds of.	Envelopes, large, packages of.	Envelopes, small, packages of.	Footscap, teams of.	Letter, teams of.	Pens, boxes, number of.	Paper weights, large, number of.	Paper weights, small, No. of.	Pins, packages of.	Quills, bunches of.	Red ink, bottles of.	Sieves, number of.	Twine, balls of.	Waters, boxes of.	Wood, cords of.	Wrapping paper, teams of.	Matches, boxes of.
1856. Dec. 31	Amount on hand.	--	1	1	2	1	1	100	4	10	1	5	1	500	1	1	1	1	1	1	1	--	--	--	14	20	1	2	--	--	--	1	1	--	--	--	1	--	34	--	10	
1857. Mar. 26	Rec'd of A. N. Hill.	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	480	80	80	80	--	--	--	--	--	2	2	--	--	--	2	--	3	4	--	1	
Mar. 31	Jas. McKnight	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	480	80	80	80	14	20	1	2	2	2	2	1	1	2	2	1	3	4	34	110	
Jan. 2	Total purchased.	--	1	1	2	1	1	100	4	10	1	5	1	500	1	1	1	1	1	1	1	480	80	80	80	14	20	1	2	2	2	2	1	1	2	2	1	3	4	34	110	
Mar. 2	Issued to R. F. Pendleton, blacksmith.	--	--	--	2	--	--	100	4	--	--	--	--	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Mar. 2	Issued to superintendent's office	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	30	6	6	6	14	20	1	2	4	4	4	--	--	--	4	1	--	1	134	110		
Mar. 31	Amount on hand.	--	1	1	1	1	1	--	--	10	1	5	1	--	1	1	1	1	1	1	--	450	74	74	74	--	--	--	--	14	14	14	1	1	14	14	1	1	124	9	--	

I hereby certify on honor that the above return is correct.

BRIGHAM YOUNG,
Governor and ex officio Superintendent of Indian Affairs, U. T.

UTAH SUPERINTENDENCY.

Return of property purchased and issued by Brigham Young, governor, and ex officio Superintendent Indian Affairs, is the quarter ending June 30, 1857.

Date.	Number of vouchers.	From whom received, and to whom issued.
1857. March—	31	Amount on hand
April 1	1	Received from Gilbert Gerrish
" 9	..	Received from A. N. Hill
June 30	1	Total received
" 1	..	Issued to E. F. Pendleton, blacksmith
" 30	..	Superintendent's office
		Total amount on hand
		Amvls, number of.....
		Bells, number of.....
		Borax, pounds of.....
		Brace bits, sets of.....
		Coal, barrels of.....
		Drill sticks, sets of.....
		Fires, dozen of.....
		Heading tools, number of.....
		Hammers, sledge, number of.....
		Hammers, small, number of.....
		Iron, pounds, number of.....
		Ranches, number of.....
		Cast-steel, number of.....
		Steel springs, number of.....
		Screw dies and screw plate.....
		Tools, shothing, No. or sets.....
		Tongs, number of.....
		Vices, large, number of.....
		Vices, hand, number of.....
		Black ink, bottles of.....
		Blank vouchers, number of.....
		Blank abstracts, number of.....
		Blank accounts current, No. of.....
		Blank returned property, No. of.....
		Blotting paper, quires of.....
		Candles, pounds of.....
		Envelopes, small, packages of.....
		Footcups, reams of.....
		Letter, reams of.....
		Pens, boxes of.....
		Paper weights, large, No. of.....
		Paper weights, small, No. of.....
		Plans, packages of.....
		Quills, bunches of.....
		Red ink, bottles of.....
		Gloves, number of.....
		Beallinaw, packages of.....
		Twine, balls of.....
		Water, boxes of.....
		Wood, cords of.....
		Wrapping paper, reams of.....
		Matches, boxes of.....

I hereby certify on honor that the above return is correct.

BRIGHAM YOUNG,
Governor and ex officio Superintendent of Indian Affairs, U. T.

INDIAN DEPARTMENT PROPERTY IN UTAH.

UTAH SUPERINTENDENCY.

Return of property purchased and issued by Brigham Young, governor, and ex officio superintendent of Indian affairs, in the quarter ending September 30, 1857.

Date.	From whom received and to whom issued.	Black ink, bottles of.	Blank vouchers, number of.	Blank abstracts, number of.	Blank accounts current, No. of.	Blank returned property, No. of.	Blotting paper, quires of.	Candles, pounds of.	Envelopes, large, packages of.	Envelopes, small, packages of.	Footscap, reams of.	Letter, reams of.	Pens, boxes of.	Paper weights, large, No. of.	Paper weights, small, No. of.	Pins, packages, No. of.	Quills, bunches of.	Red ink, bottles of.	Stoves, No. of.	Sealingwax, packages.	Twine, balls of.	Waters, boxes of.	Wood, cords of.	Wrapping paper, reams, No. of.	Matches, boxes of.
1857. June 30 Sept. 12	Amount on hand	3 1/2	390	70	70	70	3 1/2	40	5	8	1 1/2	1 1/2	1 1/2	1	1	1 1/2	1 1/2	1 1/2	1	1	2 1/2	2	1 1/2	1	8
	Issued to superintendent's office	1/2	80	8	8	8	1/2	12	2	1	1/2	1 1/2	1 1/2	1	1	1	1 1/2	1 1/2	1	1	1 1/2	1 1/2	1 1/2	1 1/2	2
	Total amount on hand	3	310	62	62	62	3	28	3	7	1 1/2	1	1	1	1	1	1	1	1	1	2	1 1/2	1	1	6

I hereby certify on honor that the above return is correct.

BRIGHAM YOUNG,
Governor and ex officio Superintendent of Indian Affairs.

Return of property purchased and issued by Brigham Young, governor, and ex officio superintendent of Indian affairs, in the quarter ending December 31, 1857.

9

I hereby certify on honor that the above return is correct.

BRIGHAM YOUNG,
Governor and ex officio Superintendent of Indian Affairs, U. T.

Statement of work done by B. F. Pendleton, Indian blacksmith, for the following bands of Indians, from June 30 to December 31, 1857.

SAURI-ETT'S BAND.

Stocking 2 rifles, at \$6; repairing 2 locks, at 75 cents.....	\$13 50	
Cutting new rifles in 6 rifle barrels, at \$1.....	6 00	
Repairing guards and making 2 new thimbles.....	1 50	
		<hr/> \$21 00

YA-UM-BI'S BAND.

Stocking 3 rifles, at \$6; repairing 1 stock and lock, \$1 25.	19 25	
New hand-sight and screw, \$1; main-spring and cutting rifles in gun barrels, \$2 75.....	3 75	
		<hr/> 23 00

ARROW-PEEN'S BAND.

Repairing guns, \$20; making arrow points, \$10.....	30 00	
Shoeing ponies, 10, at \$3; repairing 9 bridle bits, at 50 cents.	34 50	
Stocking 6 rifles, at \$6; re-rifling 9 barrels, at \$1.....	45 00	
Repairing traps, \$6 50; repairing spears, \$3 75.....	10 25	
Repairing hatchets, \$4; fire steels, \$2 60	6 60	
		<hr/> 126 35

TUK-A-PUT'S BAND.

Repairing hatchets, \$4 50; repairing knives, \$3 50.....	8 00	
Making knives, \$6; repairing guns, \$15	21 00	
Making arrow points, \$10; shoeing 8 ponies, at \$3.....	34 00	
Repairing traps, \$5; making fish spears, \$9.....	14 00	
Repairing bridle bits, \$3; repairing hoes, \$5 50.....	8 50	
		<hr/> 85 50

REO-GGIN'S BAND.

Shoeing 8 horses, at \$3; repairing guns, \$13 50.....	37 50	
Repairing traps, \$5; making arrow points, \$3 50.....	8 50	
Making bridle bits, \$4; repairing hoes and spears, \$3 50..	7 50	
Repairing hatchets	4 00	
		<hr/> 57 50

BA-TOSH'S BAND.

Repairing traps, \$6; repairing knives, \$3 50	9 50	
Making knives, \$5 50; shoeing 6 horses, at \$3.....	23 50	
Repairing guns, \$12; stocking 3 guns, at \$6.....	30 00	
Repairing hoes, \$3 50; making arrow points, \$3.....	6 50	
Making bridle bits	3 50	
		<hr/> 73 00

Carried forward..... 386 35

Statement of work done by B. F. Pendleton, &c.—Continued.

Brought forward..... \$386 35

LITTLE SOLDIER'S BAND.

Stocking 6 rifles, at \$6; repairing guns, \$19 25.....	55 25	
Bridle bits, \$6; shoeing 8 horses, at \$3.....	30 00	
Making traps, \$9; making fish spears, \$7 50.....	16 50	
Arrow points, \$4; fire steels, \$3 25; repairing pitchforks, \$3; repairing traps and knives, \$8 50.....	18 75	
		<hr/> 120 50

TABBY-SHOUT'S BAND.

Repairing hatchets, \$4; making arrow-points, \$2 50.....	6 50	
Repairing guns, \$15; making traps, \$5.....	20 00	
Shoeing 5 ponies, at \$3; making bridle bits, \$3 75.....	18 75	
		<hr/> 45 25

NOR-A-COAT'S BAND.

Repairing hatchets, \$5; arrow points, \$3 50.....	8 50	
Shoeing 8 horses, at \$3; repairing guns, \$20.....	48 00	
Making traps, \$9; repairing traps, \$3 50.....	12 50	
		<hr/> 69 00

SA-BA-COAT'S BAND.

Repairing guns, \$20; making traps, \$8.....	28 00	
Shoeing 7 horses, at \$3; repairing hoes, \$3.....	24 00	
Making arrow points, \$4 50; making spears, \$5.....	9 50	
Stocking 3 rifles, at \$6; making knives, \$5 50.....	23 50	
Making bridle bits, \$5; repairing traps, \$3.....	8 00	
		<hr/> 93 00

AW-AU-UP'S BAND.

Repairing guns, \$19 50; stocking 4 rifles, at \$6.....	43 50	
Making arrow points, \$5; fish spears, \$7.....	12 00	
Repairing traps, \$3; shoeing 3 horses, at \$3.....	12 00	
Making 3 knives, \$3; repairing hatchets, \$4.....	7 00	
		<hr/> 74 50

KO-RO-KO-KE'S BAND.

Stocking 3 rifles, at \$6; repairing guns, \$16.....	34 00	
Making arrow-points, \$5; shoeing 5 horses, at \$3.....	20 00	
Repairing traps, \$5; making knives, \$4.....	9 00	
Fish spears, \$6; making hatchets, \$9.....	15 00	
		<hr/> 78 00

REN-TOOT-SE'S BAND.

Shoeing 8 horses, at \$3; repairing guns, \$18 75.....	42 75	
Making and repairing traps, \$9; arrow points, \$6.....	15 00	
Making knives, \$6; stocking 3 rifles, at \$6.....	24 00	
		<hr/> 81 75

Carried forward..... 948 35

Statement of work done by B. F. Pendleton, &c.—Continued.

Brought forward..... \$948 35

PAH-BUSH'S BAND.

Shoeing 6 horses, at \$3 ; making bridle bits, \$5.....	23 00	
Making traps, \$8 ; making knives, \$7	15 00	
Repairing guns, \$19 ; fish spears, \$5	24 00	
Arrow points, \$6 ; stocking 2 rifles, at \$6.....	18 00	
Repairing pitchforks, and hoes and hatchets, \$6.....	6 00	
		<hr/>
		86 00

KA-TA-TO'S BAND.

Repairing guns, \$12 50 ; shoeing 9 horses, at \$3.....	39 50	
Repairing traps, \$7 50 ; arrow points, \$6 ; making knives, \$6.	19 50	
Fish spears, \$4 50 ; stocking 3 rifles, at \$6.....	22 50	
		<hr/>
		81 50

GO-SHUTE'S BAND.

Repairing guns, \$15 ; shoeing 7 horses, at \$3.....	36 00	
Making bridle bits, \$3 ; making traps, \$6	9 00	
		<hr/>
		45 00
		<hr/>
		1,160 85
		<hr/>
		<hr/>

I certify on honor that the foregoing statement is correct and just, and that I have actually done the work and used the materials for the benefit of the Indians herein specified.

BENJAMIN F. PENDLETON,
U. S. Blacksmith for the Indians in Utah Territory.

Return of property purchased and issued by Brigham Young, governor, and ex officio superintendent of Indian affairs, in the quarter ending March 31, 1858.

[illegible]

BRIGHAM YOUNG,
Governor and Superintendent of Indian Affairs, U. T.

UTAH SUPERINTENDENCY.

The United States in account current with Brigham Young, governor, and ex officio superintendent of Indian Affairs, for the quarter ending June 30, 1858.

1858. June 30	Dr. To amount per accompanying abstract	1858. June 30	Cr. By requisition No. 95, on Hon. Commissioner of Indian Affairs, Washington, favor of Hon. J. M. Bernhisel, delegate for Utah, for..... By requisition No. 96, on Hon. Commissioner of Indian Affairs, Washington, favor of Hon. J. M. Bernhisel, delegate for Utah, for.....	\$3,534 00 3,534 57 <hr/> 7,068 57
		\$7,068 57		
		<hr/> 7,068 57		

I certify on honor that the above account is just and true as stated, and that the disbursements have been faithfully made for the objects expressed in the vouchers.

BRIGHAM YOUNG,
Governor and Superintendent of Indian Affairs, Utah Territory.

UTAH SUPERINTENDENCY.

Abstract of disbursements made by Brigham Young, governor, and ex officio superintendent of Indian Affairs, in the quarter ending June 30, 1868, for current expenses.

Date.	No. of vouch.	To whom paid.	For what paid.	HEADS OF ACCOUNT.					Amount.
				Blacksmiths.	Farmers.	Pay of interpreters.	Presents.	Contingencies.	
1867.									
Aug. 18	1	Lewis Robinson	Produce and merchandise				\$1,368 44		\$1,368 44
1868.									
April 2	3	Alma Lee	do				419 01		419 01
9	3	Henry Barney	do				474 71		474 71
29	4	Wm. R. Davis & Co.	do				505 89		505 89
May 29	5	E. H. Blackburn	do				558 62		558 62
June 3	6	A. N. Hill	do				435 12		435 12
5	7	Edward Hunter	do				451 18		451 18
9	8	Aaron Johnson	do				899 45		899 45
15	9	John L. Butler	do				748 14		748 14
25	10	D. B. Huntington	Services as interpreter			\$350 00			250 00
30	11	Edward Hunter	Rent of office					\$63 00	63 00
30	12	John D. Lee	Services as Indian farmer		\$150 00				150 00
30	13	Warren S. Snow	do		150 00				150 00
30	14	Anson Call	do		150 00				150 00
30	15	Daniel Johnson	Services as porter					36 00	36 00
30	16	B. F. Pendleton	Services as blacksmith	\$175 00					175 00
30	17	D. O. Calder	Services as clerk					234 00	234 00
			Amount disbursed	175 00	450 00	250 00	5,860 57	333 00	7,068 57

I certify that the above abstract is correct and true.

BRIGHAM YOUNG,
Governor and Superintendent of Indian Affairs, Utah Territory.

Voucher No. 1.

The United States to Lewis Robison, Dr.

1857.

For the following articles, furnished sundry bands of Indians at Fort Bridger on superintendent's order:

Washakuk and band:

Aug. 14.	1,567 pounds beef, at 10 cents	\$156 70
	2,497 pounds flour, at 12 cents	299 64
	Standing Rock and band:	
	900 pounds beef, at 10 cents	90 00
	1,131 pounds flour, at 12 cents	135 72
	5 pounds tobacco, at \$1	5 00
	2 dozen shirts, at \$18	36 00
	1 dozen hats	30 00
	Teb-en-di-wah and band:	
18.	1,643 pounds beef, at 10 cents	164 30
	2,209 pounds flour, at 12 cents	265 08
	40 pairs cotton pants, at \$3	120 00
	1 dozen shirts, \$36; 1 dozen hats, \$30	66 00

1,368 44

Received, at Great Salt Lake City, Utah Territory, April 3, 1858, of Brigham Young, governor and superintendent of Indian affairs, thirteen hundred and sixty-eight dollars and forty-four cents, in full of the above account.

\$1,368 44.

LEWIS ROBISON,

(Triplicates.)

I certify, on honor, that the above account is correct and just, and that I have actually, this third day of April, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to the Indians therein mentioned.

JOSHUA FERRY, *Interpreter.*

Voucher No. 2.

The United States to Alma Lee, Dr.

1858.

For the following articles, furnished Caritio and band on superintendent's order:

April 2.	3,989 pounds beef, at 9 cents	\$359 01
	1,000 pounds flour, at 6 cents	60 00
		<hr/> 419 01

Received, at Great Salt Lake City, Utah Territory, May 12, 1858, of Brigham Young, governor and superintendent of Indian affairs, four hundred and nineteen dollars and one cent, in full of the above account.

\$419 01.

A. LEE.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this twelfth day of May, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to Caritio and band.

JOHN D. LEE,

Farmer for the Indians in Iron and Washington counties.

Voucher No. 3.

The United States to Henry Barney, Dr.

1858.

For the following articles, furnished sundry bands of Indians in Washington county, on superintendent's order:

Young-quits and band:

Mar. 31. 1,380 pounds beef, at 9 cents..... \$124 20

Tat-se Gobbits and band:

1,292 pounds beef, at 9 cents..... 116 28

Now-cap-in and band:

April 9. 1,181 pounds beef, at 9 cents..... 106 29

Quo-na-rah and band:

1,456 pounds beef, at 9 cents..... *127 94

474 71

Received at Great Salt Lake City, Utah Territory, May 21, 1851, of Brigham Young, governor and superintendent of Indian affairs, four hundred and seventy-four dollars and seventy-one cents, in full of the above account.

\$474 71.

HENRY BARNEY.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this twenty-first day of May, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to the Indians therein specified.

JOHN D. LEE,

Farmer for the Indians in Iron and Washington counties.

°Error; should be \$131 04.

Voucher No. 4.

The United States to William R. Davis & Co., Dr.

1858.

For the following articles furnished sundry bands of Indians in Iron county, on superintendent's order:

An-an-up and band :		
April 26.	1,056 pounds beef, at 9 cents	\$95 04
Young-quits and band :		
April 27.	973 pounds beef, at 9 cents	87 57
Mo-quec-tus and band :		
	1,293 pounds beef, at 9 cents	116 37
Chick-er-oo and band :		
April 29.	1,500 pounds beef, at 9 cents	135 00
Jackson and band :		
	799 pounds beef, at 9 cents	71 91
		<hr/>
		505 89
		<hr/>

Received at Great Salt Lake City, Utah Territory, May 21, 1858, of Brigham Young, governor and superintendent of Indian affairs, five hundred and five $\frac{89}{100}$ dollars, in full of the above account.

\$505 89.

W. R. DAVIS & CO.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this twenty-first day of May, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to the Indians therein mentioned.

JOHN D. LEE,

Famer to the Indians in Iron and Washington counties.

Voucher No. 5.

The United States to E. H. Blackburn, Dr.

1858.

For the following articles furnished sundry bands of Indians at Provo City, Utah county, on superintendent's order:

Tsh-ar-poo-ye-ent and band :		
May 29.	550 pounds flour, at 6 cents	\$31 80
	796 pounds beef, at 10 cents	79 60
Sow-ey-ets and band :		
	339 pounds flour, at 6 cents	38 34
	957 pounds beef, at 10 cents	95 70
Tsh-ap-pant-no-quint and band :		
	592 pounds flour, at 6 cents	35 52
	879 pounds beef, at 10 cents	87 90

San-pitch and band :	
996 pounds flour, at 6 cents	\$59 76
1,300 pounds beef, at 10 cents	130 00
	<hr/>
	558 62
	<hr/>

Received at Provo, Utah county, Utah Territory, June 10, 1858, of Brigham Young, governor and superintendent of Indian affairs, five hundred and fifty-eight ⁶²/₁₀₀ dollars, in full of the above account.

\$558 62.

E. H. BLACKBURN.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this fourth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to the Indians therein specified.

D. B. HUNTINGTON,

Interpreter.

Voucher No. 6.

The United States to A. N. Hill, Dr.

1858.

For the following articles furnished sundry bands of Indians at Great Salt Lake City, on superintendent's order :

June 3.	3,546 pounds flour, at 6 cents	\$212 76
	2,103 pounds beef, at 10 cents	210 30
	402 pounds shorts, at 3 cents	12 06
		<hr/>
		435 12
		<hr/>

Received at Provo, Utah county, Utah Territory, June 14, 1858, of Brigham Young, governor and superintendent of Indian affairs, four hundred and thirty-five ¹²/₁₀₀ dollars, in full of the above account.

\$435 12.

A. N. HILL.

(Triplicates.)

I certify, on honor, that the above account is correct and just, and that I have actually, this fourteenth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to Thorn and band.

D. B. HUNTINGTON,

Interpreter.

Voucher No. 7.

The United States to Edward Hunter, Dr.

1858.

For the following articles furnished sundry bands of Indians at Great Salt Lake City, on superintendent's order:

June 5.	2,698 pounds flour, at 6 cents	\$161 88
	2,893 pounds beef, at 10 cents	289 30
		<hr/> 451 18 <hr/>

Received at Provo, Utah county, Utah Territory, June 14, 1858, of Brigham Young, governor and superintendent of Indian affairs, four hundred and fifty-one ¹⁸/₁₀₀ dollars, in full of the above account.

\$451 18.

EDWARD HUNTER.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this fourteenth day of June, A. D. 1858, paid the amount thereof,

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to Little Soldier and band, and Nor-a-cools and band.

D. B. HUNTINGTON,

Interpreter.

Voucher No. 8.

The United States to Aaron Johnson, Dr.

1858.

For the following articles furnished sundry bands of Indians at Springville, Utah county, on superintendent's order:

June 9.	Tintick and band:	
	1,464 pounds flour, at 6 cents	\$87 84
	1,279 pounds beef, at 10 cents	127 90
	Pet-et-nete and band:	
	2,429 pounds flour, at 6 cents	145 74
	2,493 pounds beef, at 10 cents	249 30
	Tabby and band:	
	1,563 pounds flour, at 6 cents	93 78
	1,949 pounds beef, at 10 cents	194 90
		<hr/> 899 46 <hr/>

Received at Provo, Utah county, Utah Territory, June 12, 1858, of Brigham Young, governor and superintendent of Indian affairs, eight hundred and ninety-nine dollars and forty-six cents, in full of the above account.

\$899 46.

AARON JOHNSON.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this 12th day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian affairs Utah Territory.

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to the Indians therein specified.

D. B. HUNTINGTON, *Interpreter.*

Voucher No. 9.

The United States to John L. Butter, Dr.

1858.

For the following articles furnished sundry bands of Indians at Spanish Fork, on superintendent's order:

April 2.	Pin-touch and band:	
	995 $\frac{3}{4}$ pounds flour, at 6 cents	\$59 74
	1,503 pounds beef, at 10 cents	150 30
June 15.	Anter-ro and band:	
	2,335 pounds flour, at 6 cents	140 10
	1,873 pounds beef, at 10 cents	187 30
	V. Yea-hoo and band:	
	593 pounds flour, at 6 cents	35 58
	856 pounds beef, at 10 cents	85 60
	Show-oo-ner and band:	
	497 pounds flour, at 6 cents	29 82
	597 pounds beef, at 10 cents	59 70
		<hr/>
		748 14
		<hr/>

Received at Provo, Utah county, Utah Territory, June 17, 1858, of Brigham Young, governor and superintendent of Indian affairs, seven hundred and forty-eight dollars and fourteen cents, in full of the above account.

\$742 14.

JOHN L. BUTTER.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this seventeenth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian affairs Utah Territory

I certify on honor that I was present and saw the articles mentioned in this voucher distributed to the Indians therein specified.

D. B. HUNTINGTON, *Interpreter.*

Voucher No. 10.

The United States to D. B. Huntington, Dr.

1858.

June 25.	For services as Indian interpreter to the superintendent from April 19 to May 5, and from May 17 to date, fifty days, at \$5	\$250 00
		<hr/>

Received at Provo, Utah county, Utah Territory, June 28, 1858, of Brigham Young, governor and superintendent of Indian affairs, two hundred and fifty dollars, in full of the above account.

\$250.

D. B. HUNTINGTON.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this twenty-eighth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian affairs Utah Territory.

Voucher No. 11.

The United States to Edward Hunter, Dr.

1858.

June 30. For rent of superintendent's office and fixtures, from March

31, 1858, to date, 3 months, at \$21..... \$63 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, sixty-three dollars, in full of the above account.

\$63.

EDWARD HUNTER.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

Voucher No. 12.

The United States to John D. Lee, Dr.

1858.

June 30. For services rendered as farmer to the Piede Indians in Iron and Washington counties, from March 31, 1858, to

date, 3 months, at \$50..... \$150 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, one hundred and fifty dollars, in full of the above account.

\$150.

JOHN D. LEE.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

Voucher No. 13.

The United States to Warren S. Snow, Dr.

1858.

June 30. For services rendered as farmer to the Sandpitch and Utah Indians, in San Pete county, from March 31, 1858, 3 months, at \$50..... \$150 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, one hundred and fifty dollars, in full of the above account.

\$150.

WARREN S. SNOW.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

Voucher No. 14.

The United States to Anson Call, Dr.

1858.

June 30. For services rendered as farmer to the Pawvan Indians, in Millard county, from March 31, 1858, to date, 3 months, at \$50..... \$150 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, one hundred and fifty dollars, in full of the above account.

\$150.

ANSON CALL.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

Voucher No. 15.

The United States to Daniel Johnson, Dr.

1858.

June 30. For services, opening, cleaning, &c., superintendent's office from March 31, 1858, to date, 12 weeks, at \$3..... \$36 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, thirty-six dollars, in full of the above account.

\$36.

DANIEL JOHNSON.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

Voucher No. 16.

The United States to B. F. Pendleton, Dr.

1858.

June 30. For services as blacksmith to the Indians from March 31,

1858, to date, 3 months, at \$700 per annum..... \$175 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, one hundred and seventy-five dollars, in full of the above account.

\$175.

BENJAMIN F. PENDLETON.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs, U. T.

Voucher No. 17.

The United States to David O. Calder, Dr.

1858.

June 30. For services rendered as clerk to Brigham Young, governor and superintendent of Indian affairs, from March 31,

1858, to date, 78 days, at \$3..... \$234 00

Received at Provo, Utah county, Utah Territory, June 30, 1858, of Brigham Young, governor and superintendent of Indian affairs, two hundred and thirty-four dollars, in full of the above account.

\$234.

DAVID O. CALDER.

(Triplicates.)

I certify on honor that the above account is correct and just, and that I have actually, this thirtieth day of June, A. D. 1858, paid the amount thereof.

BRIGHAM YOUNG,

Governor and Superintendent of Indian Affairs.

UTAH SUPERINTENDENCY.

Return of property purchased and issued by Brigham Young, governor and ex officio superintendent of Indian affairs, in the quarter ending June 30, 1858.

Date.	From whom received and to whom issued.	Anvils, number of.	Bellows, number of.	Brace and bits, number of.	Blank vouchers, number of.	Blank abstracts, number of.	Blank accounts, number of.	Blank returns, number of.	Candles, pounds, number of.	Cattle, head, number of.	Chains, ox, number of.	Cows, number of.	Drill and stocks, sets of.	Envelopes, small, number of.	Miles, dozen, number of.	Heading tools, number of.	Hammer, sledge, number of.	Hammer, small, number of.	Lok, blk, bottles, number of.	Punches, number of.	Ploughs, number of.	Paper, blotting, quires of.	Paper weight, large.	Paper weight, small.	Pens, boxes, number of.	Pins, packages, number of.	Quills, bunches of.	Stoves, number of.	Spades, number of.	Shovels, number of.	Stock, dies and screw plates.	Tools, shoeing, sets of.	Tongs, number of.	Twine, balls, number of.	Vice, large, number of.	Vice, band, number of.	Wood, cords of.	Wafers, boxes, number of.	Wagons, number of.			
1858.																																										
Mar. 31	Amount on hand	1	1	1	127	52	53	5	16	4	9	1	4	1	10	1	5	2	1	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
June 30	Issued to superintendent's office ..				40	3	3	5						4					1																							
	Killed by hostile Indians																																									
	Died																																									
	Total amount on hand	1	1	1	87	49	49	50	14	4	7	1	1	2	1	1	5	1	1	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

I hereby certify on honor that the above return is correct.

BRIGHAM YOUNG,
Governor and Superintendent of Indian Affairs, Utah Territory.

INDIAN DEPARTMENT PROPERTY IN UTAH.

Return of property received and issued by Jacob Forney, superintendent of Indian affairs, Territory of Utah, for fractional 4th quarter of 1858, from November 1 to December 31, 1858, inclusive.

Date.	No.	From whom received.	Ambulances.	Axes.	Axe helvers.	Bridles.	Brushes.	Bed cords.	Bake ovens.	Brass kettles.	Butcher knives.	Brooms.	Blotting paper, quires.	Barley.	Blank vouchers.	Candles, pounds.	Chairs.	Candlesticks.	Coffee pots.	Carpeting, yards.	Camp kettles.	Coffee boilers.
1858.																						
Nov. 1	1	Amount on hand Nov. 1, 1858.	1	3	3	5	1	1	1	1	2	1	2			90	9	6	1	26½	3	3
	7	B. Young																				
	15	William Mills																				
	20	Bradford Leonard																				
10	30	Livingston, Kinkad & Co.		1																	1	
16	32	J. A. Lemmon																				
Dec.	7	Samson Nate																				
	41	Edward Hunter												2								
12	44	Thomas Turbit																				
16	47	Gilbert & Gerrish																				
17	48	Kirk Anderson													500							
49		D. H. Beck																				
31	66	Benjamin Ashworth																				
	67	Jesse C Little															2					
	68	Radford, Cabot & Co.					2									24						
		Total am't received and on hand.	1	4	5	6	1	1	1	1	2	3	2	2	2	735	114	6	1	26½	4	3

Return of property received and issued by Jacob Forney, superintendent of Indian affairs, &c.—Continued.

Date.	No.	From whom received.	Coffee mills.	Corn.	Canteens.	Camp stools.	Copying books.	Desks.	Envelopes, large, pack-ages of.	Envelopes, small, pack-ages of.	Elbows, stovepipe.	Frying pans.	Grain scythes.	Grass scythes.	Grindstones.	Gum arabic, pounds.	Harness, sets.	Halters.	Hatchets.	Horses.	Hammers.	Hay forks.
1858. Nov. 1	7	Amount on hand Nov. 1, 1858...	2	15	2	3	1	2	34	26	---	1	6	4	---	---	6	8	2	2	1	8
	15	B. Young.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	20	William Mills.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	30	Bradford Leonard.....	---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	---	---	---	---
	16	Livingston, Kinkaid & Co.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	32	J. A. Lemmon.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dec.	7	Samson Nate.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	44	Edward Hunter.....	---	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16	Thomas Turbitt.....	---	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17	Gilbert & Gerriah.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	49	Kirk Anderson.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	66	D. H. Beck.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	67	Benjamin Ashworth.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	68	Jesse C. Little.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		Radford, Cabot & Co.....	---	---	---	---	---	---	---	10	---	---	---	---	---	---	---	---	---	1	---	---
		Total am't received and on hand.	2	26	2	3	1	2	34	36	2	1	6	4	1	---	6	12	3	2	1	8

Return of property received and issued by Jacob Forney, superintendent of Indian affairs, &c.—Continued.

Date.	No.	From whom received.	Hinges.	Hay, tons.	Hoes.	Hand saws.	Ink, bottles of.	Inkstands.	Knives and forks, sets.	Lariat ropes.	Letter books.	Mules.	Meat boxes.	Matches, boxes.	Mirrors.	Nails, pounds.	Ox yokes and bows.	Oats.	Office seal.	Oil, gallons.	Paper, note, reams.	Paper, letter, quires.
1858. Nov. 1	7	Amount on hand Nov. 1, 1858	6	6	2	1	3	1	2	29	1	14	2	8	1	10	6	66½	1	1½	½	43½
	15	B. Young					1															
	20	William Mills																				
	30	Bradford Leonard																				
10	30	Livingston, Kinkaid & Co.								1							6					
16	32	J. A. Lemmon																47				
Dec. 7	41	Samson Nate																				
12	44	Edward Hunter																				
16	47	Thomas Turbit																				
17	48	Gilbert & Gerrish																				
	49	Kirk Anderson																				
31	66	D. H. Beck																				
	67	Benjamin Ashworth																				
	68	Jesse C. Little																				
		Radford, Cabot & Co.																				20
		Total am't received and on hand.	6	6	2	1	4	1	2	30	1	14	2	8	1	10	12	113½	1	1½	½	63½

Return of property received and issued by Jacob Forney, superintendent of Indian affairs, &c.—Continued

Date.	No.	From whom received.	Paper, foolscap, quires.	Picket pins.	Paper cutters.	Pitchers.	Pack saddles.	Plates, tin.	Ploughs.	Paper weights.	Pencils.	Quills, bundled.	Red Ink.	Shovels.	Spades.	Saddles.	Spurs, pairs.	Stovepipe, pounds.	Steel pens.	Stoves.	Screws, gross.	Snuffers.	
1858. Nov. 1	1	Amount on hand Nov. 1, 1858.	32	15	1	3	1	12	1	2	1	1	2	9	4	3	1	5	---	---	1	1	1
	7	B. Young	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	---	---	---	1	---	---
	15	William Mills	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	20	Bradford Leonard	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	30	Livingston, Kinkaid & Co.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	94	---	---	---	---	---
16	32	J. A. Lemmon	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dec.	7	Samson Nate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	41	Samson Nate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	44	Edward Hunter	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	47	Thomas Furbit	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	48	Gilbert & Gerrish	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	---	---	---	---	---	---
	49	Kirk Anderson	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	66	D. H. Beck	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	67	Benjamin Ashworth	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
68	68	Jesse C. Little	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		Radford, Cabot & Co.	4	---	---	---	---	---	---	---	12	---	---	---	---	---	---	---	---	24	---	---	---
		Total am't received and on hand.	36	15	1	3	1	12	1	2	12	1	2	12	4	3	1	14½	24	1	1	1	1

Return of property received and issued by Jacob Forney, superintendent of Indian affairs, &c.—Continued.

Date.	No.	From whom received.	Spoons, table.	Skillets.	Sand paper.	Tables.	Tumblers.	Tongue straps.	Trowels.	Tin pails.	Tin pans.	Table covers.	Tin buckets.	Tin spoons.	Tin cups.	Tents.	Wagon covers, extm.	Whips.	Wagons.	Wood, cords.	Wash pans.	Wooden pails.	Wood saws and frames.
1858.																							
Nov. 1	.....	Amount on hand Nov. 1, 1858	12	1	4	3	10	4	1	5	7	2	1	6	12	1	1	2	1	6½	1	2	
	7	B. Young																					
	15	William Mills																					
	20	Bradford Leonard																					
10	30	Livingston, Kinkaid & Co.	12									2			6						1		
16	32	J. A. Lemmon																					
Dec. 7	41	Samson Nate																					
13	44	Edward Hunter																					
16	47	Thomas Turbit																		3			
17	48	Gilbert & Gerlish																					
	49	Kirk Anderson																					
31	66	D. H. Beck																					
	67	Benjamin Ashworth																					
	68	Jesse C. Little																			8		
		Radford, Cabot & Co.																					1
		Total am't received and on hand.	24	1	4	3	10	4	1	5	7	4	1	6	18	1	1	2	1	16½	2	2	1

I certify on honor that the above return is correct.

J. FORNEY, Superintendent of Indian Affairs, Utah Territory.

Superintendent Forney's receipt to Brigham Young for property belonging to the Indian department, November 1, 1858.

Received at Great Salt Lake City, November 1, 1858, of B. Young, sr., the following property, belonging to the Indian department in this Territory : One office stove and pipe, about five pounds; two paper weights; two quires blotting paper; two hundred and thirty-five blanks, and one bottle copying ink.

J. FORNEY,

Superintendent Indian Affairs, U. T.

(Duplicate.)

PENSIONS TO WOUNDED AND DISABLED VOLUNTEERS.

LETTER

FROM

THE ACTING ATTORNEY GENERAL,

IN ANSWER TO

A resolution of the House of the 1st instant, transmitting a copy of the opinion of the Attorney General relative to the laws conferring pensions on wounded and disabled soldiers, &c.

APRIL 4, 1862.—Laid on the table, and ordered to be printed.

ATTORNEY GENERAL'S OFFICE, April 3, 1862.

SIR: I have the honor to acknowledge the receipt of a copy of the resolution of the House of Representatives passed on the 1st instant, requesting the Attorney General to furnish the House with a copy of his opinion of the 11th ultimo, relative to the laws conferring pensions on wounded and disabled volunteers, and on the widows and children of such volunteers as die or may be killed in the service. In response to that request, I beg to enclose to you, for the use of the House, a copy of the opinion referred to.

I am, sir, very respectfully, your obedient servant,

TITIAN J. COFFEY,

Acting Attorney General.

Hon. GALUSHA A. GROW,

Speaker of the House of Representatives of the United States.

ATTORNEY GENERAL'S OFFICE, March 11, 1862.

SIR: Your letter of the 17th ultimo presents for my consideration certain questions as to the proper construction of the sixth section of the act of July 22, 1861, to authorize the employment of volunteers to aid in enforcing the laws and protecting public property. This act authorizes the President to accept the services of volunteers, in such numbers, not exceeding five hundred thousand, as he may deem necessary for the purpose of repelling invasion, suppressing insurrection, enforcing the laws, and preserving and protecting the public property. After several sections which provide for the organization, pay, &c., of the force so accepted, comes the sixth section, which is as follows:

"That any volunteer who may be received into the service of the United

States under this act, and who may be wounded or otherwise disabled in the service, shall be entitled to the benefits which have been or may be conferred on persons disabled in the regular service; and the widow, if there be one, and if not, the legal heirs of such as die or may be killed in service, in addition to all arrears of pay and allowances, shall receive the sum of one hundred dollars."

1. The first question you propound is, "Are the volunteers called into service under the act above referred to, 'and who may be wounded or otherwise disabled in the service,' entitled to the pensions granted to disabled soldiers under the provisions of the acts of January 29 and August 2, 1813?"

By the act of January 29, 1813, I understand you to refer to the act of that date entitled "An act in addition to the act entitled 'An act to raise an additional military force,' and for other purposes," (2 Stat., 794,) that being the only act of that date found in the Statutes at Large. It provides for raising, in addition to the then existing military establishment of the United States, such number of regiments of infantry, not exceeding twenty, as, in the opinion of the President, might be necessary for the public service, to be enlisted for the term of one year, unless sooner discharged. The eight sections following the first make provision for the organization, pay, &c., of the said regiments; then follows the tenth section, which I am led to infer contains the provisions of this act in question. That section declares that if any officer, non-commissioned officer, musician, or private shall be disabled, by wounds or otherwise, while in the line of his duty in public service, he shall be placed on the list of invalids of the United States, at such rate of pension and under such regulations as are or may be directed by law, with a proviso that the compensation to be allowed for such wounds or disabilities to a commissioned officer shall not exceed, for the highest rate of disability, half the monthly pay of such officer at the time he is wounded or disabled; that no officer shall receive more than the half pay of a lieutenant colonel; that the rate of compensation to non-commissioned officers' musicians, and privates shall not exceed five dollars per month; and a further proviso that all inferior disabilities shall entitle the person so disabled to receive an allowance proportionate to the highest disability.

It is my opinion that this section was intended to operate only in favor of the officers and soldiers who should be received into the service under the provisions of the act of which it forms a part, to wit: the regiments of infantry, not exceeding twenty, therein authorized to be raised. It will be observed that this act is "in addition" to the act of January 11, 1812, (2 Statutes, 671,) the object of which was to raise an additional military force. Both acts were, by their terms, of temporary operation, and were intended to provide for the increase of force rendered necessary by the pending troubles with Great Britain, the act first in date having been passed a few months before, and that last in date a few months after Congress declared war against that power. The act of January 29, 1813, is modelled after the act of January 11, 1812, and the tenth section of the act first named is a mere transcript of the fourteenth section of the act of 1812. And this section of the act of 1812 is taken, with one or two slight verbal changes, from the fourteenth section of the act of March 16, 1802, (2 Statutes, 132,) fixing the military peace establishment of the United States. I am not able to find any act of Congress of later date than the act of January 29, 1813, enlarging the operation of that act, and I conclude that the sections of it in question can only furnish a rule for any disabled pensioner of the force which the act created who may yet survive. This view of the subject is confirmed by the fact that the learned editor of the Statutes at Large has marked the act of January 29, 1813, as well as the act of January 11, 1812, on which it is based, "obsolete." And Mr. Brightly, in his Analytical Digest of the Laws of the United States, omits both sections of the acts in question in his compilation of the pension laws now in force. While such authorities cannot repeal a statute, they are entitled to weight in determining the extent of its operation.

But it may be observed that the fourteenth section of the act of March 16, 1802, is of more general operation, and being, as I understand, yet in force, it seems to furnish to volunteers "wounded or otherwise disabled in the service," under the act of July 22, 1861, the benefits which, in my opinion, the act of January 29, 1813, does not extend to them. You have not, however, invited my opinion as to the operation of the act of 1802, and, of course, I do not volunteer it, but content myself with reiterating the opinion that wounded or disabled volunteers taken into service under the act of July 22, 1861, are not entitled to pensions under the provisions of the act of January 29, 1813, which I have cited.

Your question refers also to the act of August 2, 1813. The only act of that date bearing on this subject which I have been able to find is the "Act to provide for the widows and orphans of militia slain, and for militia disabled in the service of the United States."—(3 Statutes, 73.) The benefits of this act are, by its express terms, confined to officers, non-commissioned officers, musicians, and privates "of the militia, or of any volunteer corps." The sixth section of the act of July 22, 1861, confers, as we have seen, upon wounded or disabled volunteers received under the act "the benefits which have been or may be conferred on persons disabled in the regular service." Inasmuch as the provisions of the act of August 2, 1813, extend only to militia and volunteers," and not to soldiers in the "regular service," its benefits, in my opinion, are not conferred by the act of 1861 on the "wounded or otherwise disabled" volunteers who may be received into the service of the United States under the last-named act.

But here again, it may be added, that the fourteenth section of the act of 16th March, 1802, (which is an enactment conferring benefits "on persons disabled in the regular service," and therefore of the class of laws referred to by the sixth section of the act of 22d July, 1861,) provides more comprehensively for disabled pensioners, under the act of 1861, than the act of 2d August, 1813, could do, if it were applicable; for the act of 1813 confers the pension on those who "shall be disabled by known wounds received in the actual service of the United States while in the line of duty," whereas the act of 16th March, 1802, confers it on those who "shall be disabled by wounds or otherwise while in the line of duty in public service."

2. Your second question is, "Are the widows and orphans of volunteers who may die from disease or be killed in the service entitled to the pension conferred by the act of July 4, 1836?"

The sixth section of the act of 22d July, 1861, does not extend to the widow or legal heirs of such volunteers received under the act as may die or be killed in service the same benefits which it confers on volunteers wounded or otherwise disabled in the service. If it had done so, all the provisions of law which now exist or may be enacted in favor of the widow and heirs-at-law of soldiers of the regular army who die or are killed in service would, by the force of its words, have been applicable to them; but, instead thereof, it secures to them only all arrears of pay and allowances due the deceased husband or father and the sum of one hundred dollars. This may be to the widow or orphans of a volunteer under this act but a scant recompense from his country for a life lost in its defence, but it is all which the sixth section gives, and the power to enlarge it belongs only to Congress. The benefits conferred by the act of 4th July, 1836, are neither "arrears of pay" nor "allowances," within the meaning of this section; and it follows, in my opinion, that nothing in that section confers on the widows or orphans of those who may die from disease or be killed in the service the pensions allowed by that act.

3. "Are the widows of those who die or may be killed in the service entitled to a pension, in addition to the bounty provided for by the 6th section of the act of July 22, 1861?"

It is clear, as appears by the answer to the second question, that nothing in the 6th section of the act of July 22, 1861, confers a pension on the widows of those who die or may be killed in the service, but, on the contrary, the provision in that section, of a bounty of one hundred dollars, would seem to raise the presumption that widows and orphans of the class referred to were excluded from any other benefits than those named, on the principle *expressio unius est exclusio alterius*.

But apart from this, grave doubts may be suggested whether existing laws make provision for pensions to the widows of those now in service who may die from disease or be killed in battle. The first section of the act of August 2, 1813, (3 Stat., 73,) seems to be supplied by the act of July 4, 1836, (5 Stat., 127,) and that act may fairly be construed to confer its benefits on the widows and children of those only who died before its passage, and hence to have no prospective operation. I do not say that such is the true construction, but it is so ambiguously expressed that arguments of about equal force may be made in favor of and against its conferring pensions on the widows and children of those who may have died in the service since its passage, or who may now die in the service. That Congress considered it to be retroactive only may be inferred from the fact that they deemed it necessary by the act of July 21, 1848, (9 Stat., 249,) to make its provisions applicable to the widows and orphans of officers and soldiers who were in the army of the United States on the 1st day of March, 1846, or at any subsequent period during the war with Mexico. Upon the whole question, I incline to the opinion that there is no adequate provision of law by which the widows of those who die or may be killed in the service are entitled to a pension in addition to the bounty conferred by the 6th section of the act of July 22, 1861.

4. "Is there any provision of law entitling volunteers under the President's proclamation of April 15, 1861, to pensions, when disabled in the service in the line of their duty?"

The proclamation of the President of the 15th of April, A. D. 1861, was issued not only by authority of, but in strict accordance with law, and the militia received into the service of the United States under the call contained in that proclamation were, for the period for which they were mustered in, "in the actual service of the United States," directly within the meaning of the second section of the act of 2d August, 1813, (3 Stat., 73.) This section confers the right to be placed on the list of invalids of the United States, at such rate of pension and under such regulations as were then provided by the act of 10th April, 1806, or as might thereafter be provided by law, on any officer, non-commissioned officer, musician, or private of the militia, or of any volunteer corps, who should "be disabled by known wounds received in the actual service of the United States while in the line of his duty," &c. Any militiaman called and received into the actual service of the United States under the proclamation of the 15th of April, 1861, and disabled by known wounds received in that service, is therefore, in my opinion, entitled to a pension under the provisions of the act of 2d August, 1813.

In conclusion, I beg to say that in view of the great number and variety of the pension laws to be found on the statute books and the limited time which the pressing needs of the Pension bureau and my own urgent engagements have afforded me to investigate those laws, I submit these results of my examination and reflection not without some diffidence. It is difficult in some of the acts to decide whether Congress meant to make provision for cases where the death or disability in service had occurred before the passage of the act or to establish a rule for cases of the same kind which might occur in the future; but I think I may safely say that the general legislative purpose, as evinced in these acts, (subject, of course, to exceptions,) has been to make them operate retrospectively, leaving the duty of providing pensions for newly created forces

to the legislative power by which such forces might be authorized. Considering, then, the uncertainty and obscurity which belong to this subject, and the great necessity of making suitable provision for the officers and soldiers who have been or may be disabled in the suppression of the present insurrection, and for the families of such of them as may be killed or die in the service, I earnestly recommend that the attention of Congress be called to the propriety of enacting laws which may be easily understood, and which may comprehend all that the emergency requires.

I am, sir, very respectfully, your obedient servant,

EDWARD BATES,
Attorney General.

Hon. CALEB B. SMITH,
Secretary of the Interior.

SYSTEM OF REVENUE AND FINANCE IN FOREIGN COUNTRIES.

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

IN ANSWER TO

Resolution of the House of the 4th instant, in relation to existing system of revenue and finance in any foreign country.

APRIL 9, 1862 — Referred to the Committee of Ways and Means, and ordered to be printed.

To the House of Representatives:

In compliance with the resolution of the House of Representatives of yesterday, requesting any information which may have been received at the Department of State showing the system of revenue and finance now existing in any foreign country, I transmit a copy of a recent despatch from Mr. Pike, the United States minister at the Hague. This is understood to be the only information on the subject of the resolution recently received which has not been made public.

ABRAHAM LINCOLN.

WASHINGTON, April 5, 1862.

No. 41.]

Mr. Pike to Mr. Seward.

UNITED STATES LEGATION,
The Hague, March 12, 1862.

SIR: In our present transition to a system of internal taxation, I have thought it might be useful to furnish an abstract of the method by which this government raises the large revenues necessary to defray its excessive annual expenditure. I have accordingly obtained, through the department of finance, some particulars, which I beg to subjoin.

The sum proposed to be raised in this kingdom by the budget for 1862 is 57,928,000 guilders, or about twenty-four million dollars, from a population of but little over three millions.

Of this sum, 4,450,000 guilders, or \$1,840,000, is raised from customs duties

and an export and navigation tax. The remainder is raised by direct taxes in a manner I can best exhibit in a tabular form:

1st. From customs		\$1, 840, 000
2d. A direct tax on real estate or land and buildings, 10,386,850 guilders.....		4, 300, 000
(The estimated value of real estate throughout the kingdom is about 1,000 million dollars, and this tax is computed upon its revenues, which are valued at $72\frac{1}{2}$ million guilders, or near 30 million dollars. This tax is thus equal to $4\frac{1}{2}$ mills per cent. on the value of the property.)		
3d. A tax denominated the personal tax, which is levied on house rent, doors, windows, chimneys, servants, and horses, amounting to 7,098,000 guilders, or.....		2, 938, 000
4th. A tax on trades and occupations, including all wholesale and retail traders, professions, and handicrafts, of 2,900,000 guilders.....		1, 200, 000
5th. An excise tax on consumption on the following articles:		
Sugar.....	2, 000, 000 guilders	
Wine.....	1, 200, 000 "	
Distilled liquors	5, 772, 000 "	
Salt.....	2, 520, 000 "	
Soap.....	1, 260, 000 "	
Beer and vinegar.....	500, 000 "	
Meat	1, 380, 000 "	
Fuel and lights	2, 940, 000 "	
	17, 572, 000 "	7, 050, 000
6th. A stamp tax imposed on all bargains and contracts, and on all acts brought into legal or administrative proceedings	1, 450, 000 "	580, 000
7th. A registration duty imposed on all acts and contracts referred to above.....	4, 250, 000 "	1, 760, 000
8th. A tax on wills and inheritances of	6, 439, 000 "	2, 665, 000
9th. On mortgage and deeds		145, 000
10th. Manufactures of gold and silver		100, 000
11th. Postages		800, 000
12th. Tolls on highways, canals, &c.....		622, 000
		<u>24, 000, 000</u>



It will be observed that there is no direct tax on personal property or incomes, as such taxes are believed to stand in the way of industrial and commercial development, and to operate to expel capital.

The late decisive successes of the federal government in Tennessee have produced their natural effect on this side of the water.

When Charleston and Savannah shall have fallen, and our gunboats traverse the Mississippi river, all interest in the affairs of the confederates will cease in Europe.

I have the honor to be, with great respect, your most obedient servant,

JAMES S. PIKE

Hon. WILLIAM H. SEWARD,

Secretary of State, Washington, D. C.









